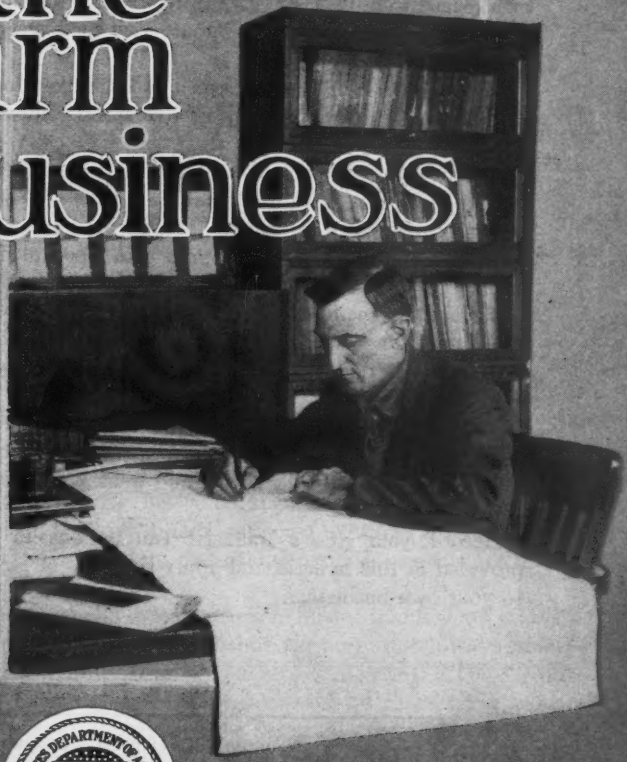
FARMERS' BULLETIN 1139
UNITED STATES DEPARTMENT OF AGRICULTURE

Rev.ed
follow

A Method of Analyzing the Farm Business



XUM

A FARM to be successful should maintain its productivity and should return a reasonable wage for the labor of the farmer and his family, after paying farm expenses and deducting a fair rate of interest on the investment.

Four important factors in the success of a farm business are size of business, yield of crops, returns from live stock, and efficiency in the use of labor.

What is the size of your farm business?

What part of your investment is in land, buildings, live stock, machinery, and other capital?

Is your crop area properly proportioned to the various crops with regard to profits? With regard to labor distribution?

How do your crop yields compare with the average yields of the locality?

What classes of live stock return you the most money?

How do the returns from your live stock compare with the average of your locality?

How many acres of crops do you raise per man? Per horse?

Is your farm so organized that each part of the business is yielding satisfactory returns?

How much have you left for your own labor, after deducting from your total receipts your year's expenses, value of labor performed by members of your family, and interest on your investment?

How much does the farm contribute toward your family living?

This bulletin outlines a system of analyzing the farm business, designed to help the farmer answer such questions as these and thus locate the strong and weak points in his plan of management.

Record your year's financial transactions in the blanks provided in this bulletin and apply the tests of farm efficiency to your own business.

Contribution from the Office of Farm Management

H. C. TAYLOR, Chief

Washington, D. C. June, 1920

XUM

A METHOD OF ANALYZING THE FARM BUSINESS.

H. M. DIXON, *Assistant Agriculturist.*
H. W. HAWTHORNE, *Scientific Assistant.*

CONTENTS.

	Page.		Page.
What an analysis shows	3	Factors affecting farm profits	15
Farm accounts	4	Blanks for use in analyzing the farm business and determining the farm income	29
Method of farm analysis	5		

WHAT AN ANALYSIS SHOWS.

THIS BULLETIN outlines a method of analyzing the farm business to determine the investment, receipts, expenses, and profits. It also includes blanks for use in making such an analysis and recording the amount and value of farm products contributed toward the family living. Its purpose is to assist farmers to a better understanding of the financial side of their business. Thousands of farms have been studied by this method within the past few years, with the object of analyzing their operations from a business standpoint and learning some of the more important reasons for their success or failure. Experience shows that it is not always possible to distinguish profitable farms merely by casual observation. Where a farm is operated as a large business, if free from debt, even a low rate of interest on the capital invested without any wages for the operator may return sufficient funds to give the place a prosperous appearance. In other cases an appearance of prosperity may be due quite largely to income from outside sources. A farm can not properly be called successful unless it pays a fair rate of interest on the investment, returns fair wages for the farmer's labor, and, at the same time, maintains or increases the fertility of the soil.

Most farmers have the details of their business sufficiently well in mind for the purposes of analysis, but they are not always able to summarize these details into a concrete statement. They realize that the gain from a large business should be more than from a small one, that good cows are more profitable than poor ones, and that good crops are more desirable than those that barely pay for

NOTE.—A part of the material in this bulletin was first issued in 1915 as U. S. Department of Agriculture Farmer's Bulletin 661, by E. H. Thomson and H. M. Dixon. Several years' experience with the application of this method to the business analysis of a large number of farms has made possible the revision of the former bulletin.

harvesting. Their main difficulty has been that they have had no convenient way of determining just how good or how poor the business really was; in other words, no way of measuring its efficiency. With such an analysis as outlined herein, a farmer can more readily find the strong and weak points in his system of management and thus make changes with some assurance that they will result in greater profits.

Agricultural teachers, county agents, and other extension workers, as well as farmers, will find the blanks used in this form of analysis helpful. Teachers may give copies to their scholars for use in making records of their home farms. These records may then be summarized and furnish information to both teacher and scholars concerning economic phases of the local agriculture. Groups of farmers assembled for a discussion of the economic side of their business may find the blanks outlined in this bulletin of value, as arrangements can be made so that each farmer can be furnished a copy to figure his own farm profits. Later meetings may be devoted to a discussion of the results. Work of this kind will help reveal the true status of the local agriculture and show some of the problems confronting the farmers. With the blanks properly filled, the information should be helpful in solving many problems of farm management.

The blanks may also be filled in by the individual farmer and sent to the State Agricultural College or to the United States Department of Agriculture for suggestions as to improvements in his system of management.

When these data are obtained for farms where no accounts are kept, some of the items to be recorded may appear to be rough estimates, but experience in studies of this nature has shown that farmers can give most of the details of their business if the questions asked correspond to the terms in which they think. A farmer may not know, offhand, what his total farm income is, but he does know with considerable accuracy the facts necessary to determine this income. It is important to bear in mind that the final results in the analysis of the farm business are determined mainly by a few large items which the farmer knows quite accurately. A variation of a few dollars in the final result should not seriously affect the conclusions to be drawn as to the profitableness or unprofitableness of the farm business.

FARM ACCOUNTS.

Farm accounts may be grouped into two classes: (1) Those pertaining to the farm business as a whole, or "financial accounts," and (2) those pertaining to an analysis of the various enterprises, commonly called "detail cost accounts." The method presented

here pertains to the analysis of the farm business as a whole. In order properly to analyze each enterprise it is necessary in addition to this analysis to obtain labor and other records for all the enterprises and feed records for each live-stock enterprise.

In making a record of the farm business, some accounts are of value. Many farmers have a record of the more important financial transactions. The accounts will vary on different farms, but a memorandum of all farm receipts and expenses is valuable when summarizing the year's business. Farm accounting is more a question of knowing what accounts to keep and what use to make of them than of the kind of form or blank. This method of farm analysis will suggest the accounts of most value.[1]

Many of the State agricultural colleges and experiment stations have prepared a simple financial record book for farmers. These books which are prepared in connection with the farm management extension work are put out either free, or at a nominal charge to cover the cost of printing. Those interested in securing information regarding account books or other blank forms for keeping accounts should get in touch with their State agricultural colleges or experiment stations. The local county agricultural agent may be able to supply books prepared for use in the State.

METHOD OF FARM ANALYSIS.

The blank forms outlined on pages 29 to 40 have been prepared for use in determining the net income from the farm business. Space is also provided for recording the amount and value of farm products furnished the family. If a farmer is not interested in this latter phase of the analysis, the financial analysis may be determined independently and the spaces provided for family-used products left

[1] The advent of Federal and State income-tax laws makes it necessary for a large percentage of farmers to submit reports of their income, even though they may not have to pay any income tax. Farm accounting from the farm-management viewpoint is primarily for the purpose of enabling a man to improve the organization of his farm business. However, many farmers keep a farm record for income-tax purposes. If the income tax is reported on the accrual (inventory) basis, the opening inventory must be recorded at the beginning of the year, and not made up from memory at the end of the year. Whether a man elects to report his income on the cash receipt and disbursement basis or the accrual (inventory) basis, an inventory aids materially in determining the depreciation which should be claimed on farm buildings, farm machinery, work stock, breeding stock, and other farm equipment. A record of receipts and expenditures is also valuable because many small cash transactions take place in a year's farm business which are easily forgotten when no record is kept.

It is very desirable in the long run that a farmer report his taxable income on the accrual basis rather than on the cash receipt and disbursement basis, because the accrual basis permits crediting to each year the income derived from that year's business, whereas the cash receipt and disbursement basis credits the business with the actual cash transactions in that year, and these may sometimes be abnormal. For example, a farmer may accumulate a surplus of stock over several years which is sold at one time. Unless he had credited to previous years the accrued value of such sale stock he makes himself liable to taxation for the full amount of income in the year in which the live stock is sold, which often subjects that year's income not only to the normal tax but to high surtaxes as well. In other years he perhaps has not had sufficient income to offset his expenses and personal exemptions. Some approved system of accounts is recommended by the Internal Revenue Bureau for every farmer who is required to make an income-tax report.

XUM

blank. The wide variation in the kinds of farming carried on in different parts of the country renders it impracticable to prepare a single set of blanks for all conditions. The forms, are, therefore, rather general, and it may often be necessary to insert items not listed. Since more than one-third of the farms in this country are operated by tenants, the blanks have been designed for use in analyzing the business of a farm operated by either the owner or tenant.

FARM TENURE.

In farm-management studies a farm is usually understood to be all the land operated as one unit. Exception to this may be necessary in some cases, for instance, where the operator rents out single fields it may be well to include his share of the returns from the rented-out areas. The farm may consist of both owned and rented land, if all, or nearly all, this area is operated by one set of machinery, horses, workmen, etc. When a man owns two farms, operated rather independently of each other, they should be considered separate farms. The operator is the person who is responsible for the year's farming operations. Thus, if an owner directs the farm operations he is the operator; but if a renter directs the operations, the owner is the landlord and the tenant is the operator.

The cropper, share hand, halver, or tenant laborer usually furnishes the manual labor and little or none of the working equipment. He, therefore, bears close relation to the wage hand, the main difference being that he is paid a share of the farm products instead of cash wages for his services. The farm operator furnishes all or nearly all the capital, pays nearly all the expenses, and exercises most of the supervision of the business. Such a proposition may be considered a part of the farm business, and the value of the share of products received by the cropper or share hand, minus any expense other than labor paid by him, may be inserted as the expense for "cropper" labor (blank form, p. 35). The value of the products he received must also be included in the receipts, and the other expenses he paid included under "Current expenses." The operations of croppers or share hands who furnish any considerable part of the operating equipment and operate a part of the farm independently of the rest of the business should usually be handled as separate propositions. The blank is designed for handling such propositions in the way which seems to represent best the conditions on the individual farm.

FARM INVENTORY.

An inventory is a list of the amount and value of all farm property. In this method of analysis the farm inventory is very important, and space is provided for making such a record at the beginning and end of the year. Such an inventory shows whether or not

the business has been increased or decreased during the year. Whether or not the year as a whole has been a profitable one can not well be determined without the inventory.

In taking the farm inventory the date when the farm year begins will vary. Some farmers begin their year's accounting on January 1, while others find some other date more desirable. In some sections it corresponds to the time tenants ordinarily change farms. It is a practice on many farms to close the accounts at March 1 or April 1, as this represents the time of year in many regions when practically all feeding operations from the preceding year have been completed. The fundamental principle in taking an inventory is to choose a time when the least feed and unsold products are on hand.

FARM AREA.

The farm area (blank form, p. 29) should include all the land operated as one farm. The farm acreage is separated into eight divisions according to utilization, namely, (1) acres in crops, (2) acres in tillable land fallowed or idle, (3) acres in rotation pasture, (4) acres in permanent pasture tillable, (5) acres in open or cleared pasture not tillable, (6) acres in woodland pastured, (7) acres in woodland not pastured, (8) acres in waste land, roads, etc. If more than one crop is grown on any of the land during the year, the acreage should be counted but once for determining the "acres in crops."

CROP RECORD.

The blank form for the crop record is shown on pages 30 and 31. Space is provided for recording the acreage and yield of each crop, the amount and value of the operator's or the landlord's sales, and the amount and value of crops for family use. Crops grown that are not mentioned in this schedule should be written in, using the blank space, or spaces provided by scratching out the names of crops not grown in the locality. The sum of the acres in the several crops should equal the "Acres in crops" shown on page 29. If a second crop is grown on any of the fields during the year, the acreage should be "ringed" (as ㉕) to avoid confusion in adding the acres in crops. Under "Sales" all amounts sold from the farm or held for sale should be entered. Crops fed to live stock on the farm should not be included as sales. Crops held for sale from previous years should not be inventoried, as they are a part of the previous year's business, but crops held from the previous year for feeding on the farm must be inventoried under "Feed and supplies" (p. 36).

On tenant farms any portion of the tenant's share of crops sold or held for sale is listed under the heading "Operator's sales," while any of the landlord's crops sold, including those held for sale, are listed

under the heading "Landlord's sales." Where the landlord transfers any of his share of crops to another farm, the value of these should be entered as sales for the farm from which they are removed. When farmers operate their own farms and rent additional land, any of the crops sold from their own farm or any of their share sold from rented land should be entered under the heading "Operator's sales."

LIVE-STOCK RECORD.

The blank form for the live-stock record is shown on pages 32 and 33. This form provides for a record of the number and value of all kinds of live stock at the beginning and at the end of the year, of all sales and purchases within the year, and of the number and value of all animals that died or have been killed and used by the family within the year. The record of all live stock furnished hired labor is also important on some farms, and should be duly recorded. There may be a variation in the number of any kind of stock at the beginning and end of the year, according to the number bought, sold, raised, died, or slaughtered. The number of each kind of stock on hand at the beginning of the year, plus the number purchased and raised, minus the number sold, that have died, and have been slaughtered, must equal the number on hand at the end of the year. Animals appearing in one class in the first inventory may appear in a more mature class in the second inventory, and animals born within the year may appear as sales and not in the inventories. The number of dairy cows is often increased during the year from animals classed as heifers in the first inventory. In the same way the number of heifers or steers may be increased during the year from animals classed as calves in the first inventory, or by purchases. All live stock both born and sold during the year will appear as sales, but not in the inventory. Conservative market prices should govern the live-stock inventory values. On all farms except those on which the landlord has a share of the live stock the record is made under the heading "Operator's live stock."

Live-stock products.—Space is provided in the blank form on page 34 for the amounts and values of all live-stock products sold, such as milk, butter, eggs, wool, etc. Any of these products exchanged for groceries and other supplies should be entered as sales. The principle to follow in recording the year's farm receipts is to include as receipts the value of all farm products leaving the farm, whether sold or given in exchange for other provisions. Space is also provided for entering the amount and value of live-stock products taken from the farm for family use.

Live-stock summary.—The space under the heading "Live-stock summary" (p. 34) is for a concise statement of the business transac-

tions for each kind of live stock and for the entire live-stock enterprise. For each kind of live stock add receipts from live-stock products and from sales and the inventory value at end of the year. From this sum subtract the sum of the purchases, plus the inventory value at the beginning of the year. The result is the increase or decrease in the financial transactions for each kind of live stock and for the total live-stock part of the farm business.

OTHER SOURCES OF INCOME.

The space under the heading "Other sources of income" (p. 34) is for recording such items as money received for man or team labor, machine work, and other sources of income outside the farm business to which some part of the business contributed. The value of dwelling, wood for fuel, and other items of home supplies furnished by the farm may be placed in the space provided in this form. The rent received from tenant houses or other buildings on the farm is a receipt, when the values of such buildings are included in the farm real-estate value. Where the value of "Feed and supplies" is greater at the end of the year than at the beginning, the difference is a receipt to the year's business, and may be transferred direct from the blank form on page 36 to the summary, page 38.

FARM EXPENSES.

The farm expenses may be considered under five divisions, namely: (1) Current expenses, (2) family labor, (3) decrease in value of feed and supplies, (4) live-stock decrease, and (5) depreciation charges.

The items of farm expense vary with the kind of farming and the region, and any items not included in the list given on page 35 should be written in.

Current expenses.—The expenses for paid labor constitute an important item on many farms and should be very carefully computed and placed in the spaces provided. For the board of hired labor either of two methods may be used in arriving at a charge for this item; the entire expense for the board of hired labor may be charged and the proportion of the board furnished by the farm carried as a receipt to the enterprises contributing, or the charge for board may be made for only the food purchased. The final result for most farms is practically the same by either method.

The next items of current expense relate to the repairs of machinery, buildings, fences, drains, terraces, etc. These also represent an important part of the expense of operating a farm. Determining the proper amount of expense to charge against each of these items for a

given year is often perplexing, because extensive repairs may be made within one year that will last over several years. For this reason space is provided for recording the expense for repairs of buildings, machinery, fences, etc., along with inventory values and depreciation charges (pp. 36 and 37). If the expense for repairs and improvements has not more than maintained the value of the farm, the entire expense may be charged against the one year's business. If the expense for repairs for the year is more than is necessary for maintaining the buildings, machinery, etc., the normal expense should be calculated as the charge to the year's business under current expenses. (For machinery, see blank form, p. 37, and for buildings, etc., see blank form, p. 36.) The other items of expense following are more or less self-explanatory. For many of the items of expense, space is provided for recording quantities such as the number of months of labor, the amount of fertilizer, etc., facts which add considerable value to the record. The item of "interest" at the foot of the list refers to interest paid upon money borrowed within the year to carry on the business, or for the purchase of feeding steers, lambs, etc., not represented in the farm inventories, and does not refer to interest on the farm mortgage.

Unpaid family labor.—The value of unpaid family labor is also an expense chargeable to the farm business, and it is taken care of in the summary form, page 38. This item is determined on the basis of what it would cost to have the same work done by hired help, or the amount of additional labor that the operator would have had to hire to carry on the same-sized business had the family labor not been available.

Feed and supply decrease.—Where the value of feed and supplies is less at the end of the year than at the beginning, the difference is an expense. This expense should be calculated from the feed and supply record, page 36, and transferred to the summary, page 38.

Live stock decrease.—If the value of live stock at the end of the year, plus the sales, is less than the value of live stock at the beginning of the year, plus purchases, the difference represents a loss, and should be charged as an expense. This will seldom occur except in case of disease or marked decrease in market value. This may be determined from the live-stock summary, page 34, and if a decrease exists it may be transferred directly to the proper space in the farm summary, page 38.

Depreciation of equipment and buildings.—In addition to the current farm expenses there are certain other items, such as depreciation, which may be called fixed charges. These occur in the records of all farms, though in varying degree. Buildings may be constructed so that they will last for 100 years, or they may have to be rebuilt

every 25 or 30 years. The life of machinery depends on the care given and the extent to which it is used. Although there is no appreciable expense each year, these buildings and machines eventually have to be replaced. It is proper that a proportionate share of this replacement cost should be charged against the farm each year; otherwise, whenever a new barn or dwelling is built the entire cost of this building would have to be charged against the business for that particular year. Depreciation charges, therefore, are merely a method of distributing these costs over the period of years that they are in use.

The amount of depreciation that should be charged each year as an expense is left to the judgment of the farmer. No set rules can be given, as no two farms are exactly alike in this respect. The sum of the amount of depreciation on machinery (blank form p. 37), plus the depreciation of buildings, fences, etc. (blank form p. 36), represents the amount to be transferred to the farm summary.

FARM INVESTMENT.

Farm investment, or farm capital, includes the value of all real estate, live stock, machinery and equipment, feed and supplies, and cash to run the business.

Real estate and improvements.—A record of the real estate and improvements is most interesting and valuable when made out in sufficient detail to make possible a study of the essential considerations. The space under "real estate" in blank form, page 36, is for recording the value of the farm, including buildings, fences, and water supply. Conservative market values should be used, and not high speculative prices or low assessed valuations. When values are too high or too low the results are of little use in analyzing the farm business. If the farm is mortgaged, no account of this is necessary, as the total amount of capital used in conducting the farm business is necessary in determining the year's profits, regardless of whether or not a part of this capital is borrowed. Space is also provided in this blank for recording the value of the buildings, fences, drains, etc., at the beginning and end of the year, the value of improvements made during the year, the value of property sold or salvaged, depreciation charges, and expenses for repairs. Ordinarily it is not necessary to inventory the fences, drains, etc., as the annual repair charge will usually care for these. In most instances it will therefore be found more practical to carry through the inventories only the building valuations. Labor expended in the construction of new buildings, tile drains, or other improvements, should be included with the expense for materials under the proper headings in the real estate and improvements record, and should not be entered under

labor in the current expenses, page 35. Both repairs and depreciation are legitimate expenses in conducting a farm business. The essential point is that in arriving at a fair charge for either item, both must be considered. On one farm the improvements may be kept in first-class repair, in which case the depreciation charges will be low and the repair charge high, while the reverse may be true on another farm. The amount chargeable for a given year as a depreciation expense and as a repair expense does not depend so much upon the actual outlay for the one year as it does upon the practice over a period of years. For this reason space is provided under "repair expenses" for recording both the repair expenses for that year and the average, or what is normally expended for repairs. The expense for depreciation may be derived either by the inventory method—that is, by adding to the value at beginning of the year the value of improvements or new equipment added during the year, and subtracting from the sum the value at end of year plus value of property sold or salvaged—or on the basis of the years of remaining life. The years of remaining life basis has been found very satisfactory for many farms.

In computing the farmer's income it is not necessary to include in the farm summary expenditures for improvements (blank form, p. 36), because if they are included at all they appear both in the expense items and in the inventory items showing an increase, so that the entries cancel each other in the final calculations. The record of such improvements may therefore be treated as a memorandum and the value of such investments will appear as additional capital for the following year's business.

Live stock.—The investment in live stock is found in the live-stock record blank form, pages 32 and 33. The method of arriving at this is explained on page 8.

Machinery and equipment.—The blank form on page 37 is designed for recording the investment and outlay in machinery and equipment. The value stated for each item should be a fair price for it as compared with a new machine, according to its condition at the date of the record. Space is provided for recording values at the beginning of the year, value of purchases, value of sales, value at end of the year, depreciation charges, and value of repairs. With this information at hand, when it is desired to make a study of machinery in detail, depreciation charges may be determined either through the method of taking the difference between value at beginning of the year plus purchases, and value at end of the year plus sales or salvage, or on the basis of the years of remaining life of the machinery. However, it is not of sufficient importance to make such detailed study in the farm business analysis of many farms, and an inventory

for the beginning of the year, the purchases, sales or salvage, depreciation, and repairs will be sufficient.

Feed and supplies.—The quantity and value of feed and supplies on hand at the beginning and at the end of the year is important, as any increase or decrease in this represents a gain or loss (p. 36). The importance of this record to the business as a whole will vary according to the time the farm year begins. Thus, if it begins on April 1, ordinarily only enough roughage or grain will be on hand to last until the new crops are harvested. As previously stated, grains or hay held for sale are not included with those held for feeding purposes. The reason for accounting for these items of feed and supplies is that they form a part of the farm investment, and also represent an increased or decreased item of income in the year's business.

Cash.—The item of "cash to run the farm" should represent the average amount of money the farmer has on hand during the year for the purpose of paying current farm expenses; in other words, the average of his checking account above money used for personal and household expenses. This varies, not only from farm to farm but with the type of farming as well, as a dairy farm may be returning an income every month of the year, while a cotton or tobacco farm may return most of the year's income within one season of the year. The amount of cash necessary to run the business will range from $100 to $1,000 on most farms.

FARM SUMMARY.

The blank form on page 38 is for a summary of the farm business. The items for this summary are taken from the totals in the preceding forms, as follows:

Investment.—In arriving at the amount of capital invested in the year's business, use either the average of the investment at the beginning and at the end of the farm year, or simply the investment at the beginning of the year, whichever more nearly represents the true capital invested in the year's business. The conditions on the individual farm should govern this. If real estate improvements are made, additional equipment is purchased, or additional live stock are added early in the year and used in the year's business, then the average of the investment at the beginning and end of the farm year should be used. If such changes in investment are made late in the year, then the amount at the beginning of the year will probably more nearly represent the capital in that year's business. For the investment in real estate, calculate and transfer from page 36, for live stock, from pages 32 and 33, for machinery and equipment, from page 37, and for feed and supplies, from page 36. Also insert the amount of cash used to run the farm. The total of these five items represents the entire farm investment on which interest should be charged.

XUM

Receipts.—Under receipts enter the totals for crop sales from page 31, for live stock net increase from page 34, for receipts from other sources, from page 34, and for the increase, if any, in feed and supplies, from page 36. The sum of these four groups represents the total of the farm receipts.

Expenses.—Under expenses, enter the totals for current expenses from page 35, for unpaid family labor (compute this figure as explained on page 10), for live stock net decrease, if any, from page 34, for depreciation of buildings and machinery from pages 36 and 37, and for decrease in feed and supplies, if any, from page 36. The sum of these represents the total farm expenses.

Farm income.—Subtract the total expenses from the total receipts and the result represents the farm income, which is the money received for the use of the capital and pay for the operator's labor.

Labor income.—Capital has an earning power which at least equals the current rate of interest on well-secured farm loans. Interest at this rate, deducted from the farm income, gives the farmer's labor income.

The labor income represents the amount of money the farmer has left after paying all business expenses of the farm and deducting interest on the money invested in the farm business. In addition to the labor income the farmer has the use of the farmhouse, and the products that are furnished by the farm toward his living, such as fruit, garden vegetables, dairy products, and fuel.

The difference between receipts and expenses, which represents the farm income, will not necessarily correspond to the money on hand or in the bank, as personal and living expenses have to be paid out of this amount. Furthermore, in the case of farmers having mortgages or other debts, the interest on these, as well as any principal paid, must come out of the farm income. Therefore, the record of the farm business may show a fairly large difference between the receipts and expenses, and yet the farmer may not have the cash to show for it at the end of the year, owing to the fact that the funds have been spent for living or for personal uses or have been put into other investments, such as life insurance or paying off the mortgage. The object of this record is to analyze the farm business; that is, to ascertain how much the farmer makes, not how much he actually saves. Having learned what the farm is returning, the responsibility rests with the farmer as to how much he spends personally or uses in other ways. For convenience in finding the net worth at the beginning and end of the farm year a blank form is provided on page 39.

Per cent received on investment.—Another way of expressing farm profits is that of allowing the farmer the value of his year's work as an expense and finding the per cent return upon investment after this is paid. For many farms, and especially those where prac-

tically all the labor is hired, the per cent returned upon investment may be the most satisfactory way of indicating farm profits. For determining this figure subtract the value of the farmer's own labor from the farm income and divide the result by the capital invested.

The value of the farmer's own labor is an allowance for the services of the farmer for labor and supervision at the rate at which he would have to pay another man to take his place. This is exclusive of farm dwelling and farm products used by his family.

Farm supplies for family use.—As previously stated, the blanks have been designed to record, in addition to the financial analysis, the amount and value of farm supplies used by the family. In carrying this to the summary, add the values shown under the crop record, page 31, live-stock record, pages 32 and 33, live-stock products, page 34, and other sources, page 34.

Statement of net worth.—In addition to the analysis of the year's farm business, it is of interest and value to prepare a statement of net worth, or balance sheet, to show the financial worth at a given time. The net worth represents the difference between the resources, which include all property owned by you and owing to you, and the liabilities, which include all amounts owed by you to some one else. The blank form on page 39 is designed for computing the net worth, both at the beginning and end of the year. The difference between the total net worth for these periods will represent the increased or decreased net worth for the year. This should not be hard to compute, as most of the figures may be carried forward from other forms as indicated. From the standpoint of borrowing capital, the net worth statement in addition to the year's business analysis is very important. The analysis of the year's business shows what has been accomplished through the year's farming operations. The net worth statement shows the value of all the farmer's property, and how much the farmer got ahead during the year.

FACTORS AFFECTING FARM PROFITS.

There are a number of factors which materially affect success in the organization and management of farms. Some are of greater importance than others, some may be disregarded without serious consequences; but as a rule the profits derived from farming depend very largely upon the extent to which certain essential features of organization and management have been adopted and adhered to.

TYPE OF FARMING.

The first consideration in farming is the type to be followed. The type of farming followed in any given case must be adapted to soil, climatic, and labor conditions, and especially to local conditions with

XUM

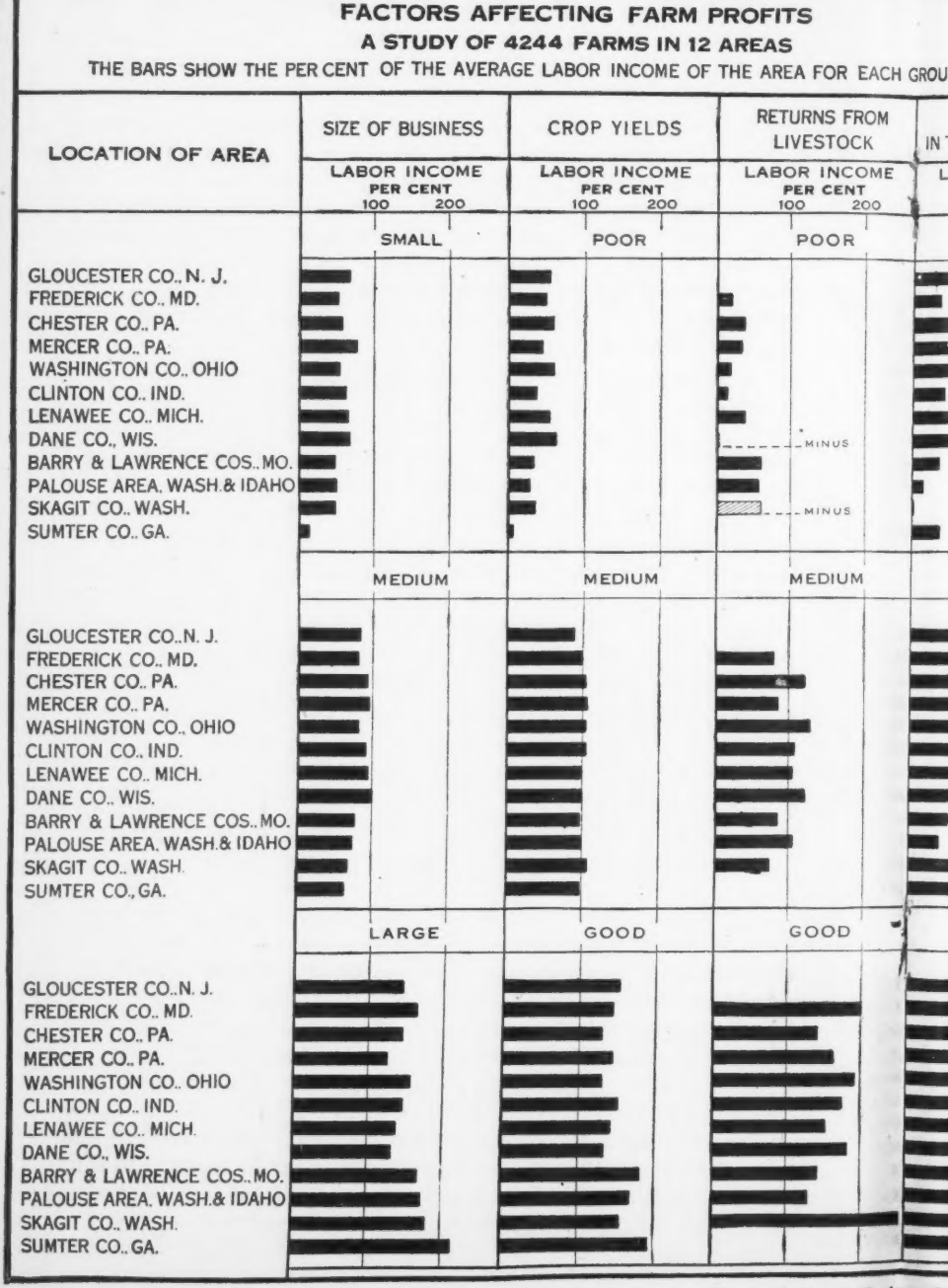


FIG. 1.—Factors affecting farm profit

EACH GROUP OF FARMS

OM K | EFFICIENCY IN THE USE OF LABOR

OME 00 | LABOR INCOME PER CENT 100 200

LOW

MEDIUM

HIGH

A COMPARISON OF FARM PROFITS WHEN ONE, TWO, THREE AND ALL FOUR OF THE FACTORS ARE ABOVE THE AVERAGE OF THE AREA

LOCATION OF AREA	PER CENT OF THE AVERAGE LABOR INCOME (100 200 300 400 500)
ABOVE THE AVERAGE IN ONE FACTOR	
FREDERICK CO., MD.	
CHESTER CO., PA.	
MERCER CO., PA.	
WASHINGTON CO., OHIO	
CLINTON CO., IND.	
LENAWEE CO., MICH.	
DANE CO., WIS.	
BARRY & LAWRENCE COS., MO.	
PALOUSE AREA, WASH. & IDAHO	
SKAGIT CO., WASH.	
ABOVE THE AVERAGE IN TWO FACTORS	
FREDERICK CO., MD.	
CHESTER CO., PA.	
MERCER CO., PA.	
WASHINGTON CO., OHIO	
CLINTON CO., IND.	
LENAWEE CO., MICH.	
DANE CO., WIS.	
BARRY & LAWRENCE COS., MO	
PALOUSE AREA, WASH. & IDAHO	
SKAGIT CO., WASH.	
ABOVE THE AVERAGE IN THREE FACTORS	
FREDERICK CO., MD.	
CHESTER CO., PA.	
MERCER CO., PA.	
WASHINGTON CO., OHIO	
CLINTON CO., IND.	
LENAWEE CO., MICH.	
DANE CO., WIS.	
BARRY & LAWRENCE COS., MO.	
PALOUSE AREA, WASH & IDAHO	
SKAGIT CO., WASH.	
ABOVE THE AVERAGE IN FOUR FACTORS	
FREDERICK CO., MD.	
CHESTER CO., PA.	
MERCER CO., PA.	
WASHINGTON CO., OHIO	
CLINTON CO., IND.	
LENAWEE CO., MICH.	
DANE CO., WIS.	
BARRY & LAWRENCE COS., MO.	
PALOUSE AREA, WASH. & IDAHO	
SKAGIT CO., WASH.	

ecting farm profits. (See page 26.)

XUM

reference to markets and market facilities, as well as to the business conditions existing on the individual farm.

Profits in farming are greatly affected from year to year by conditions over which the farmer has little or no control. Such conditions are numerous, but probably the most important of these in most regions are the nature of the soil and the variation from year to year in weather conditions. There are other conditions which one man alone can little control but which require the cooperation of an entire community for best results, such as maintaining and improving public roads and public schools, or other social, educational, and economic phases of farm development.

There is also another group of factors affecting farm profits over which the individual farmer may have nearly entire control. From a study of these factors it is usually possible to determine both the good points and the deficiencies in a system of farming, and steps for improvement may be taken accordingly, with some assurance of their resulting in a better income. On a majority of farms success is primarily dependent upon four important factors. These are, (1) size of business, (2) yield of crops, (3) returns from live stock, (4) efficiency of labor. Many other factors have their influence, and must not be overlooked on a given farm; for instance, the wise expenditure of capital is very important. Overcapitalization in the way of paying too much for land, having too many or too expensive buildings, too much machinery, too high-priced work stock, etc., are very important, and at the same time a farm must be efficiently equipped. Again, in obtaining a good return from live stock the efficiency in feeding is very important. Farm management studies show, however, that the farmer whose business is efficient in the four factors outlined is generally successful. The farms that excel in none of these respects usually fail. Those deficient in one or two may succeed, but their chances of success are greatly lessened.

SIZE OF FARM BUSINESS.

In comparing farms with respect to size or volume of business, some of the more important factors to be considered are size of farm, acres in crops, the amount of live stock carried, the amount of capital invested and amount of labor required in operating the farm. On farms where one enterprise predominates, such as a specialized cotton, fruit, or dairy farm, the best measure of size of business may be the acres in cotton, acres in fruit, or number of cows. The amount of labor required in operating the farm may be used to good advantage in comparing farms of different types. Twenty acres of truck crops may, under suitable conditions, equal 200 acres of grain, hay and general live stock, both as to labor required and income received.

The approximate amount of labor required to raise some of the more important crops and care for the live stock is shown in Table I, which is based on the labor data obtained in practically all the enterprise studies thus far conducted by the Office of Farm Management, covering thousands of farms.

A work day represents 10 hours of labor. It requires on the average 10 hours of man labor and 10 hours of horse labor to cut and store an acre of hay per cutting. Therefore, an acre of hay on the average represents the work of one man and one horse for one day. The amount of labor required on other enterprises varies considerably from that for hay. Of course, innumerable factors influence the time required for most farm operations, but the results shown in this table approximate standards for average conditions in many areas. These, or such modifications of them as local experience may render advisable, may be used in working out the amount of both man and horse labor required for the productive enterprises on a given farm.

TABLE I.—*Approximate days of work required for the production of crops and in caring for live stock.*[1]

[A work day is 10 hours of man or horse labor.]

Operations.	Number of work days (10 hours each).		Operations.	Number of work days (10 hours each).	
	Man labor.	Horse labor.		Man labor.	Horse labor.
Production of crops (per acre):			Production of crops (per acre)—Con.		
Timothy, alfalfa and clover hay, per cutting	1	1	Onions, Ohio, grown from seed (sold in bunches)	149	10
Oats, wheat, barley, rye, buckwheat, and millet	2	3	Tomatoes, Northern States	15	11
Corn husked from standing stalks	2	4.5	Tomatoes, Florida	17	7
Corn husked from shock, or for silo	5	5.5	Cucumbers, Florida	32	10
Corn for silo, Central States	3	5.5	String beans, Florida	22	7
Corn husked, Southern States	4	4	Radishes, Ohio (sold in bunches)	45	5
Sorghum cut for hay	3	3	Beets and carrots, Ohio, (sold in bunches)	82	8
Irish potatoes, Northern States	11	10	Strawberries, Florida	74	9
Irish potatoes, Southern States	13	7	Citrus Fruits, Southern States [3]	10	7
Sweet potatoes	10	5	Apples	15	5
Sugar beets [2]	6	10	Caring for live stock (per year, except feeding steers and feeding sheep):		
Sugar cane for sirup, Georgia	16	7	Horses, corn-belt States	8	.75
Tobacco, Kentucky	35	8	Horses, Eastern States	12	.75
Cotton	13	6	Dairy cows	18	2
Peanuts (harvested), Georgia	5	3	Young stock, cattle, colts, etc	2.5	.2
Peanuts (hogged off), Georgia	3	2	20 Feeding steers per month	2	1.5
Watermelons, Georgia and Florida	5	4	10 hogs, corn-belt States	10	2
Field Beans	4	5.5	10 hogs, Eastern States	20	2
Rice, Louisiana, Arkansas and Texas	3.5	5.5	10 brood sows and raising pigs to weaning	30	5
Cabbage, Northern States	13	12	100 Ewes	50	5
Cabbage, Southern States	20	8	100 Feeding sheep, yard lots, per month	3.5	3
Onions, Texas (sold by crate)	68	14	100 Chickens (well cared for)	20	2
Onions, Ohio, grown from sets (sold in bunches)	93	10			

[1] Acknowledgment is due to the following, who furnished some of the material contained in Table I: Messrs. L. A. Moorhouse, J. S. Ball, R. C. Wilcox, W. C. Funk, Rex. E. Willard, Frank Montgomery, J. H. Arnold, M. R. Cooper, M. A. Crosby, E. S. Haskell, and G. H. Miller.

[2] Does not include contract labor.

[3] Exclusive of picking, packing and hauling of fruit.

XUM

In Table II[1] the farm profits for small, medium, and large-sized business are shown for a number of areas. The farms are divided in size-groups on the basis of the measure which seemed to indicate best the size of business for each area under study. Whether the chance of receiving a good income in these areas is best in operating a small business, a medium-sized business, or a large business is answered in this table.

TABLE II.—*Size of business.*

Areas.	Number of farms.	Labor income. Average of farms with—			Per cent return on investment. Average of farms with—		
		Small business.	Medium business.	Large business.	Small business.	Medium business.	Large business.
Gloucester County, N. J.	125	$686	$867	$1,479	7.8	8.6	11.2
Frederick County, Md.	150	189	304	611	3.4	4.6	5.8
Chester County, Pa.	502	475	816	1,212	7.0	9.2	10.4
Mercer County, Pa.	349	221	282	354	2.6	4.1	4.9
Washington County, Ohio.	25	148	228	432	1.9	3.4	5.8
Clinton County, Ind.	100	342	518	828	5.0	5.6	5.7
Lenawee County, Mich.	453	340	501	725	4.3	6.1	6.2
Dane County, Wis.	60	278	408	512	3.1	4.5	4.9
Tama County, Iowa.	210	943	1,587	1,837	4.6	5.7	5.6
Warren County, Iowa.	184	555	431	918	3.5	3.2	4.6
Barry and Lawrence Counties, Mo.	244	180	291	628	3.2	5.1	7.4
Palouse area, Washington and and Idaho.	246	221	328	756	5.4	6.5	7.4
Skagit County, Wash.	202	66	94	244	2.2	3.2	5.2
Sumter County, Ga.	280	174	741	2,435	5.5	8.9	9.9

Many farmers realize but meager incomes because their business is small. Such men often feel that their farm business is sufficiently large to keep them busy the entire year, when, as a matter of fact, the actual results accomplished represent less than a half year's work. An acre of hay normally requires 8 to 10 hours of man labor, or approximately 1 day's work for each cutting; an acre of wheat, 15 to 20 hours; an acre of potatoes, 80 to 110 hours; caring for and feeding a dairy cow, 150 to 200 hours per year. Only about 250 to 275 days are actually available for productive work. Much time is lost in doing jobs about the farm which take time, but really count for little. A farmer may keep busy the whole year, but if he has accomplished during that time only such work as should normally be done in 200 days his wages will be in proportion. A large volume of business may be done on a farm of few acres, while only a small business may be conducted on a poorly managed farm of much larger

[1] For the study shown in Tables II, III, IV, and V the farms for each area were arranged into three groups. One-third of the farms for each area are, therefore, represented in the lowest group, one-third in the medium, and one-third in the highest group. Extra space is provided in each of these tables for adding the results in other areas.

acreage. Without reasonable size of business there is little opportunity for a satisfactory profit in farming.[1]

Ways of increasing the size of the farm business.—There are a number of ways of increasing the size of the farm business, some of which are:

1. Buying or renting more land. Farmers owning or renting small farms often rent additional land adjoining. This permits the use of a larger area with comparatively little additional capital.

2. Growing crops requiring more labor; that is, following a more intensive form of farming. One hundred acres devoted to corn, oats, wheat, etc., which may not be sufficient to keep two men busy, can easily be increased to a full two-man farm by the addition of a few acres of such crops as sugar beets, potatoes, or fruit, depending upon the market demand. Many persons have made the mistake of buying a small area, with the intention of following an intensive type of agriculture in localities where there is no market for the products of such farming. The fact that land is adapted to truck crops is not sufficient justification for attempting to grow them. There must be the possibility of disposing of the products at remunerative prices.

3. The addition of more live stock, sometimes even beyond the point where the farm itself will support them. This is a practice followed by a large number of dairy farmers in some of the Eastern States. This necessitates the purchase of feed where the nature of the land is such as to prohibit the raising of grain as cheaply as it can be bought, or where the production of roughages and succulent feeds is more profitable than grain growing. Loss is liable to result in this undertaking unless the additional animals are of high producing quality. This is the one way open to many farmers whose business

[1] The number of farms, average size, labor income, year or years of study, and investigators in charge of the studies used in Tables II, III, IV, V, and VI are as follows: Gloucester County, N. J., 125 farms, average size, 81 acres, average labor income, $1,013, 3 years, 1914–1916, by G. A. Billings; Frederick County, Md., 150 farms, 140 acres, $368 labor income, 1915, by H. A. Miller; Chester County, Pa., 502 farms, 94 acres, $845 labor income, 1911, by H. M. Dixon; Mercer County, Pa., 349 farms, 101 acres, $285 labor income, 1916, by Earl D. Strait; Washington County, Ohio, 25 farms, average size, 158 acres, average labor income, $272, 7 years, 1912–1918, by H. W. Hawthorne; Clinton County, Ind., 100 farms, 126 acres, $558 average labor income, 7 years, 1910, by E. H. Thomson, 1913–1918, by H. M. Dixon; Lenawee County, Mich., 453 farms, 112 acres, $522 labor income, 1911, by H. M. Dixon; Dane County, Wis., 60 farms, average size, 148 acres, average labor income, $407, 5 years, 1913–1917, by H. C. Taylor; Tama County, Iowa, 210 farms, average size, 220 acres, average labor income, $1,378, 1918, by E. D. Strait; Warren County, Iowa, 184 farms, average size, 177 acres, average labor income, $637, by E. D. Strait, 1918; Barry and Lawrence Counties, Mo., 244 farms, 122 acres, $371 labor income, 1914, by W. J. Spillman and F. H. Branch; Palouse area, Washington and Idaho, 246 farms, 319 acres, average labor income, $436, 1914, by L. W. Fluharty; Skagit County, Wash., 202 farms, 46 acres, $152 labor income, 1915, by Harry Thompson and Earl D. Strait; Sumter County, Ga., 268 white owner farms, 418 acres, $470 labor income, 1913, and 280 white owner farms, 432 acres, $1,817 labor income, 1918, by H. M. Dixon and H. W. Hawthorne.

Cooperation: Mercer County, Pa., survey in cooperation with the Pennsylvania State Agricultural College; Washington County, Ohio, survey for the years 1912 and 1913, in cooperation with the Ohio Agricultural Experiment Station; Dane County, Wis., survey in cooperation with the Wisconsin State Agricultural College; Tama and Warren Counties, Iowa, surveys in cooperation with the Iowa Agricultural College; Sumter County, Ga., survey, 1918, in cooperation with the Georgia Agricultural College.

XUM

would otherwise be too small to give them a good living. The success of many farms is in large measure dependent upon the number of high-quality cows or other live stock that can be kept.

4. By performing work outside the farm, such as teaming or working at lumbering during the winter. In many farming regions the opportunity for this source of income is very limited.

No one realizes better than the farmer that as a rule no phenomenal profits can be expected, and persons going into farming as a business should consider this fact. Agriculture is a good life work; it will pay wages and moderate returns on investment, provided both capital and labor are wisely expended. Success is most difficult to attain, however, unless the farm business is large enough to permit the efficient use of capital, labor, and managerial ability.

YIELD OF CROPS.[1]

Crop yields greatly influence farm profits. Some farmers make fair profits with low yields because some other phase of the farm business is sufficiently developed to offset the poor yields, but it is doubtless true that these same farmers could make more money with higher yields. Profits increase at least until yields are obtained considerably above the average for the region, but beyond this limit very high yields are liable to be obtained at the expense of farm profits.

[1] As a measure of the yields of crops either the yield per acre of each crop may be used, or the yields of all the crops grown may be reduced to a percentage comparative basis by the method shown, which is commonly known and referred to as "crop index." On farms where one crop predominates, the yield of that crop may be the best index of good yields, but where a number of crops are grown the use of the crop index will be found of value in making comparisons.

The crop index which is used as a measure of the yields on a given farm, is found as follows: Suppose a given farm produces—

500 bushels of corn on	10 acres.
200 bushels of wheat on	10 acres.
25 tons of hay on	20 acres.
Total	40 acres.

Suppose, further, the average yields in the locality are such that, on the average, farmers produce—

500 bushels of corn on	7.7 acres (65 bushels per acre).
200 bushels of wheat on	8.0 acres (25 bushels per acre).
25 tons of hay on	16.7 acres (1.5 tons per acre).
Total	32.4 acres.

The crop index of the farm in question is now found by dividing 32.4 by 40; that is, by dividing the acres required with average yields by the acres required on this farm to produce the given quantities of these products. In this case the crop index is 0.81. This means that the yields on this farm are approximately 81 per cent of the average of the community.

TABLE III.—*Crop yields.*

Area.	No. of farms.	Labor income. Average of farms with—			Per cent return on investment. Average of farms with—		
		Poor yields.	Medium yields.	Good yields.	Poor yields.	Medium yields.	Good yields.
Gloucester County, N. J.	125	$515	$923	$1,609	4.5	8.7	14.5
Frederick County, Md.	150	181	371	551	3.6	4.7	5.5
Chester County, Pa.	502	508	892	1,129	6.1	9.1	11.3
Mercer County, Pa.	349	129	303	423	1.4	4.5	5.8
Washington County, Ohio.	25	165	284	364	2.0	3.9	5.2
Clinton County, Ind.	100	198	583	890	3.9	5.5	6.9
Lenawee County, Mich.	453	284	517	765	3.8	5.7	7.1
Dane County, Wis.	60	266	407	561	3.6	4.0	4.9
Tama County, Iowa.	210	676	1,309	2,158	4.2	5.3	6.2
Warren County, Iowa.	184	233	725	936	2.5	4.0	4.8
Barry and Lawrence Counties, Mo.	244	120	355	682	2.2	5.4	8.6
Palouse Area, Washington and Idaho.	246	119	434	750	5.1	6.5	7.8
Skagit County, Wash.	202	49	147	214	2.7	3.9	4.1
Sumter County, Ga.	280	57	1,124	2,230	4.2	8.5	11.5

In Table III the farms for the various areas are placed in groups of those returning low yields, medium yields, and high yields, with the labor income and per cent return on investment shown for each group. These results show clearly the importance of obtaining good crop yields if they are not obtained at too great an expense. Other factors undoubtedly contributed toward making profits the greater on the farms with higher yields, but the fact that all areas show the same general results is indicative of the importance of this factor.

RETURNS FROM LIVE STOCK.

On farms where live stock is an important enterprise, the quality of the stock is very important. On a majority of farms, except in the South and certain of the Western States, more of the crops are fed to live stock than are sold direct. On many farms the animals are the market for the crops, hence the production of these is a most important factor in farm profits. The best of corn and hay crops will count for little when fed to animals that make returns below the market prices for these crops. On the other hand, good live stock on the individual farms may not be profitable if not fed and cared for economically.

In Table IV is shown the effect of the returns from live stock upon income when the farms where live stock is an important enterprise are arranged in three groups according to whether they show poor, medium, or good production. The returns from live stock are meas-

XUM

ured by the amount and value of product returned per animal, and the table shows that the returns from live stock constitute an important factor.

TABLE IV.—*Returns from live stock.*[1]

Area.	Number of farms.	Labor income. Average of farms with—			Per cent return on investment. Average of farms with—		
		Poor live-stock returns.	Medium live-stock returns.	Good live-stock returns.	Poor live-stock returns.	Medium live-stock returns.	Good live-stock returns.
Frederick County, Md.	150	$76	$285	$737	2.8	4.5	6.5
Chester County, Pa.	502	413	912	1,215	5.0	9.6	12.0
Mercer County, Pa.	349	136	244	473	1.4	3.9	6.3
Washington County, Ohio.	25	54	243	528	.2	3.5	7.6
Clinton County, Ind.	100	82	605	995	3.6	5.7	6.9
Lenawee County, Mich.	453	208	543	817	2.8	5.9	7.8
Dane County, Wis.	60	−9	500	740	1.7	4.7	6.2
Tama County, Iowa.	210	726	1,271	2,137	4.2	4.9	6.6
Warren County, Iowa.	184	−70	631	1,339	2.0	3.8	5.5
Barry and Lawrence Counties, Mo.	244	223	317	541	3.2	4.5	7.7
Pelouse area, Washington and Idaho.	246	250	463	577	5.5	6.5	7.2
Skagit County, Wash.	246	−79	100	393	1.7	3.8	5.3

[1] Gloucester County, N. J., and Sumter County, Ga., areas are not included in this table because of the relative unimportance of the live-stock industry in these areas.

EFFICIENCY IN THE USE OF LABOR.

The exceedingly diverse nature of farm operations makes wide opportunity for inefficiency to enter into their performance. In a factory with modern machinery a man is expected to do a certain amount of work, and in many instances the machine sets the pace for him. Generally the worker on the farm must be his own boss and must set his own pace. He must also work under most adverse weather conditions at certain times. Often a great deal of work must be devoted to things which add little or nothing to the profits of the business. It requires twice as much time for some men as compared with others to do a certain kind of work. Work may also be so organized that a given amount of effort accomplishes more than the average. The efficient use of horse labor is also very important and bears a close relation to size of business. On the one-man farm the horses must necessarily be unemployed every time the farmer finds it necessary to do work not requiring horse labor. On the larger farms the work can be so arranged as to have one man keep the horses busy while others attend to the work where horse labor is not needed.

In Table V is shown the effect upon farm profits of a low, medium, and high return for man labor. The common basis used for comparing efficiency in the use of labor is that of crop acres per man, and

this is a satisfactory measure providing the farms are of the same general type. Where farms vary in type a good measure is the number of days of productive labor per man. Inefficiency in the use of labor may be due to lack of opportunity, indifference of the operator, or many other factors. Whatever the reasons, the results show that with a low return per man the profits will usually be correspondingly small.

TABLE V.—*Efficiency in the use of labor.*

Area.	Number of farms.	Labor income. Average of farms with—			Per cent return on investment. Average of farms with—		
		Low labor returns.	Medium labor returns.	High labor returns.	Low labor returns.	Medium labor returns.	High labor returns.
Gloucester County, N. J.	125	$773	$1,120	$1,149	7.4	10.2	10.1
Frederick County, Md.	150	174	362	587	3.6	4.5	5.8
Chester County, Pa.	502	530	936	1,073	6.6	9.5	10.5
Mercer County, Pa.	349	239	256	361	3.0	3.9	4.6
Washington County, Ohio.	25	181	305	332	2.0	4.5	4.7
Clinton County, Ind.	100	316	550	812	4.6	5.7	6.0
Lenawee County, Mich.	453	313	520	733	4.1	5.6	6.9
Dane County, Wis.	60	312	457	455	3.6	4.4	4.5
Tama County, Iowa.	210	722	1,380	2,061	4.2	5.4	6.0
Warren County, Iowa.	184	373	647	885	2.5	4.1	4.8
Barry and Lawrence Counties, Mo.	244	182	257	666	3.4	4.2	8.0
Palouse area, Washington and Idaho.	246	95	242	944	4.8	6.4	8.0
Skagit County, Wash.	202	4	131	291	2.0	3.8	5.1
Sumter County, Ga.	280	532	1,224	1,675	5.0	8.8	10.5

THE EFFECT OF ALL FOUR FACTORS.

The results shown in Tables II, III, IV, and V relative to the effect of size of business, yield of crops, production of live stock, and efficiency in the use of labor, are evidence that no one of these is the determining factor for success. Size of business is very important, but a large business conducted without attention to these other factors will probably result in a loss. In Table VI is shown the effect upon profits of having one, two, three, or all four factors (size of business, crop yields, production of live stock, or efficiency in the use of labor) better than the average of the region. Those with two of these factors better than the average make more than those with only one, and those with all four factors above the average far excel all others in profits. Only a small proportion, usually less than 10 per cent, of the farms are better than the average in all four respects, while from 20 to 30 per cent of the farms in each area have only one factor better than the average of the region, and from 9 to 21 per cent of the farms are below the average in all four factors. (Table VI.)

TABLE VI.—*A comparison of farm profits when one, two, three and all four of the factors (size of business, crop yields, returns from live stock, and efficiency in the use of labor) are above the average of the region.*[1]

Area.	Number of farms.	Farms above the average of the region in—							
		One factor		Two factors.		Three factors.		Four factors.	
		Per cent of total farms.	Average labor income.	Per cent of total farms.	Average labor income.	Per cent of total farms.	Average labor income.	Per cent of total farms.	Average labor income.
Frederick County, Md.	150	28	$394	39	$400	19	$774	4	$1,288
Chester County, Pa.	502	26	432	38	827	21	1,339	6	1,907
Mercer County, Pa.	349	28	190	35	304	19	424	7	665
Washington County, Ohio	25	31	137	21	176	20	480	14	611
Clinton County, Ind.	100	27	252	29	496	22	943	9	1,606
Lenawee County, Mich.	453	24	321	36	467	20	930	7	1,241
Dane County, Wis.	60	24	165	35	345	25	655	6	1,044
Tama County, Iowa	210	29	512	30	1,352	25	2,480	5	3,700
Warren County, Iowa	184	28	351	36	629	16	1,339	8	1,662
Barry and Lawrence Counties, Mo.	244	22	168	26	450	18	527	13	898
Palouse area, Washington and Idaho	246	29	117	33	501	15	1,069	7	1,186
Skagit County, Wash.	202	27	15	35	160	16	190	8	673

[1] Gloucester County, N. J., and Sumter County, Ga., areas not included in this table because of the relative unimportance of the live-stock industry in these areas.

A well-balanced farm business is nearly always profitable. The farms that are as good or better than the average of their community in all four of the factors here mentioned seldom fail to make a good profit. Thus, if a farm is devoted to a type of farming adapted to its conditions, if it is as good or better than the average in size of business, yield of crops, production of live stock, and efficiency in the use of labor, and is adequately and economically equipped, it is almost certain to be profitable. The weakest factor is the one that needs attention in improving the business. If the quality of the live stock is high, greater improvement in the farm business can usually be obtained by devoting attention to developing the size of the business or sale of cash crops, or increasing labor efficiency, rather than by further improving the quality of live stock.

Figure 1 (pp. 14–15) illustrates graphically the data presented in Tables II, III, IV, V, and VI. Instead of showing the average labor income of the groups of farms in each area with small, medium, and large sized business, with poor, medium, and good crop yields and live-stock returns, and with low, medium, and high labor efficiency, the chart shows the percentage the average labor income of each group is of the average of all farms of the area. The groups with small sized business returned only about 55 per cent of the average labor

income of the area, while the groups with large sized business returned 158 per cent of the average. The groups with poor crop yields returned 44 per cent of the average labor income of the area, while those with good crop yields returned 156 per cent. The groups having poor returns from live stock returned only 25 per cent of the average labor income of the area, while those with good returns from live stock returned 179 per cent. The groups of farms low in labor efficiency returned 54 per cent of the average labor income of the area, while those high in labor efficiency returned an average labor income equal to 155 per cent of the average of the area.

By a little closer study of the chart something of the relative importance of these factors in each area may be determined. For example, in areas having the greater part of the receipts from live stock, there is a greater difference between the average labor income of the groups of farms having poor returns and good returns from live stock than between the groups having poor crop yields and good crop yields—returns from live stock being the factor of greater importance. In areas having the greater part of the receipts from the sale of crops, there is a greater difference between the average labor income of the groups of farms having poor crop yields and good crop yields than between the groups having poor returns and good returns from live stock—crop yields being the factor of greater importance. The areas in Mercer County, Pa.; Washington County, Ohio; Dane County, Wis.; and Skagit County, Wash., are predominantly live-stock areas, while those in Gloucester County, N. J.; Barry and Lawrence Counties, Mo.; Palouse area in Washington and Idaho; and Sumter County, Ga., are predominantly crop areas.

In the part of the chart showing a comparison of the profits on farms with one, two, three, or all four of the factors above the average of the area, the average labor income of the groups of farms above the average of the area in but *one* factor seldom exceeds 50 per cent of the average labor income of all farms; the groups of farms with *two* factors above the average of the area have average labor incomes around the average of those of the area as a whole. The groups of farms better than the average of the area in *three* factors have labor incomes about 75 per cent above the average of the area, while those better in all *four* factors have labor incomes 175 per cent above the average of the area. About one-fourth of all the farms were above the average of the area in only one factor, one-third in two factors, one-fifth in three factors, and less than one-tenth in all four factors.

BLANKS FOR USE IN ANALYZING THE FARM BUSINESS AND DETERMINING THE FARM INCOME.

State .....

County .....

Township .....

Farm year beginning .....

Operator .....

P. O. Address .....

Landlord .....

P. O. Address .....

Location .....

Miles from market .....

Soil type .....

Topography .....

Farm Area.

Acres owned	Acres in crops .....
Acres cash rented	Acres in tillable land lying out .....
Acres share rented	Acres in rotation pasture .....
Total	Acres in permanent pasture tillable .....
Acres rented out	Acres in open pasture not tillable .....
Acres operated	Acres in woodland pastured .....
.....	Acres in woodland not pastured .....
.....	Acres in waste lands, roads, etc .....

173388°—20—Bull. 1139——1

CROP RECORD.

Crops.	Acres.	Yield.		Operator's sales.			Landlord's sales.			Family use.	
		Per acre.	Total.	Amount.	Price.	Value.	Amount.	Price.	Value.	Amount.	Value.
Cotton, wages											
Cotton, croppers											
Cotton seed, wages											
Cotton seed, croppers											
Corn for grain											
Corn fodder											
Corn for silage											
Other corn											
Wheat											
Rye											
Oats											
Barley											
Buckwheat											
Seed, clover or timothy											
Straw											
Hay, clover or timothy											
Alfalfa (.....cuttings)											
Cowpea hay											
Soy bean hay											

UNIVERSITY OF MICHIGAN

| | | |

OPERATOR'S LIVE-STOCK RECORD.

Kinds.	Beginning of farm year.			End of farm year.			Sales during year.			Purchases during year.			Died.	Family use.	
	Number.	Price.	Value.	Number.	Price.	Value.	Number.	Price.	Value.	Number.	Price.	Value.	Number and value.	Number.	Value.
Horses															
Mules															
Colts (____) [1]															
Cows															
Heifers over 1 year															
Calves under 1 year (____) [1]															
Bulls															
Steers over 1 year															
Ewes															
Lambs under 1 year (____) [1]															
Brood sows															
Other hogs															
Pigs (____S.____F.) [1]															
Chickens															
Turkeys															
Ducks															
Total															

[1] Record number of calves, colts, lambs, and spring and fall pigs born during year.

[1] Record number of calves, colts, lambs, and spring and fall pigs born during year.

LANDLORD'S LIVE-STOCK RECORD.

Kinds.	Beginning of farm year.			End of farm year.			Sales during year.			Purchases during year.			Died.	Family use.	
	Number.	Price.	Value.	Number.	Price.	Value.	Number.	Price.	Value.	Number.	Price.	Value.	Number and value.	Number.	Value.
Horses															
Mules															
Colts (____)[1]															
Cows															
Heifers over 1 year															
Calves under 1 year (____)[1]															
Bulls															
Steers over 1 year															
Ewes															
Lambs under 1 year (____)[1]															
Brood sows															
Other hogs															
Pigs (____S.____F.)[1]															
Chickens															
Turkeys, ducks, geese															
Total															

[1] Record number of calves, colts, lambs, and spring and fall pigs born during year.

173388°—20—Bull. 1139—2

LIVE-STOCK PRODUCTS.

Items.	Sales.				Family use.	
	Amount.	Price.	Operator.	Landlord.	Amount.	Value.
Butter, milk, cheese						
Eggs						
Meat						
Wool						
Breeding fees						
Hides						
Total						

LIVE-STOCK SUMMARY.

	Horses and mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total live stock.
Live-stock products (p. 34)						
Live stock sold (pp. 32, 33)						
Live stock end of year (pp. 32, 33)						
Total						
Live stock purchased (p. 32)						
Live stock beginning of year (pp. 32, 33)						
Total						
Increase [1]						
Decrease [1]						
Operator's net increase [1]						
Operator's net decrease [1]						
Landlord's net increase [1]						
Landlord's net decrease [1]						

OTHER SOURCES OF INCOME.

Items.	Receipts.				Family use.	
	Amount.	Price.	Operator.	Landlord.	Amount.	Value.
Man and team labor						
Machine work						
Rent—land, buildings						
Sirup and sugar						
Bees and honey						
Lumber, wood, etc.						
Total						

[1] If sum of stock products, stock sold, and stock at end of year is greater than sum of stock purchased and stock at the beginning of year, the difference is increase; if less, decrease.

CURRENT EXPENSES.

Items.	Operator.	Landlord.
Year hands ..... (.....months)		
Month hands ..... (.....months)		
Day hands ..... (.....months)		
Cotton picking, chopping (.....months)		
Cropper labor ..... (.....months)		
Contract labor ..... (.....months)		
Board of hired labor ..... (.....months)		
Repairs, machinery (p. 37)		
Repairs, dwelling (p. 36)		
Repairs, tenant houses (p. 36)		
Repairs, other buildings (p. 36)		
Repairs, fences (p. 36)		
Repairs, drains or terraces (p. 36)		
Feed: Roughage		
Feed: Grain, etc		
Pasture, bedding		
Feed grinding, silo filling, corn shredding		
Milk hauling, cow testing, ice		
Horseshoeing		
Veterinary, medicines, dips, etc		
Breeding fees, registry fees		
Seeds, plants, trees		
Fertilizer, wage land ..... (.....tons)		
Fertilizer, cropper land ..... (.....tons)		
Lime (.....tons), manure ..... (.....tons)		
Spray material		
Twine		
Thrashing, clover hulling		
Baling and wire, cotton ginning		
Other machine work hired		
Fuel and oil for farm work		
Auto for farm use		
Telephone		
Bags, cans, crates, barrels, boxes, etc		
Storage, freight, commission		
Advertising, auctions		
Insurance		
Taxes		
Water tax		
Cash rent		
Interest		
Total		

REAL ESTATE AND IMPROVEMENTS.

[T=Tenant, L=Landlord.]

Items.	Value at beginning of year.	Value of improvements made during year.	Value of property sold or salvaged during year.	Value at end of year.	Depreciation charges.		Repair expenses.	
					Per cent.	Amount.	During year.	Normal.
Dwellings								
Tenant houses								
Other buildings								
Fences								
Drains, terraces								
Land clearing								
Total for operator								
Total for landlord								

	Beginning of year.	Purchased during year.	Sold during year.	End of year.
Value operator's real estate				
Value landlord's real estate				

FEED AND SUPPLIES.

[T=Tenant, L=Landlord.]

Items.	Beginning of farm year.			End of farm year.		
	Amount.	Price.	Value.	Amount.	Price.	Value.
Hay						
Silage						
Corn						
Wheat						
Oats						
Cotton seed						
Seed cane						
Clover, grass seed						
Total for operator						
Total for landlord						
Operator's increase [1]				Decrease [1]		
Landlord's increase [1]				Decrease [1]		

[1] If value of feed and supplies at end of year is greater than at beginning the difference is "increase"; if less, "Decrease."

MACHINERY AND EQUIPMENT.

[T=Tenant, L=Landlord.]

No.	Items.	Value at beginning of year.	Value of purchases during year.	Value of sales during year.	Value at end of year.	Depreciation charges.		Value of repairs made during year.
						Per cent.	Amount.	
	Wagons, beds, racks							
	Buggies, carriages							
	Sleds							
	Stalk cutters							
	Breaking plows							
	Harrows							
	Rollers, plankers							
	Corn, cotton planters							
	Grain drills, seeders							
	Plant setters							
	Cultivators							
	Corn, grain binders							
	Mowers							
	Tedders							
	Hay rakes, loaders							
	Hay stackers, balers							
	Manure spreaders							
	Fertilizer distributors							
	Thrashers, hullers, etc							
	Husker, etc							
	Ensilage cutters							
	Grain cleaners							
	Feed grinders							
	Sirup and sugar eq'p't							
	Beet, tobacco eq'p't							
	Potato diggers, etc							
	Sprayers, etc							
	Engines							
	Tractors							
	Autotrucks							
	Work harness							
	Driving harness							
	Milking machines							
	Other dairy equipm't							
	Sheep equipment							
	Hog equipment							
	Poultry equipment							
	Bee equipment							
	Other equipment							
	Total for operator							
	Total for landlord							

SUMMARY.

	Operator.		Landlord.	
	Item.	Total.	Item.	Total.
Investment: [1]				
Real estate (p. 36)				
Live stock (pp. 32, 33)				
Machinery and equipment (p. 37)				
Feed and supplies (p. 36)				
Cash to run farm				
Total	→		→	
Farm receipts:				
Crops (p. 31)				
Live stock, increase (p. 34)				
Other sources (p. 34)				
Increase feed and supplies (p. 36)				
Total	→		→	
Farm expenses:				
Current (p. 35)				
Unpaid family labor (___ mo.)				
Live stock, decrease (p. 34)				
Depreciation (pp. 36, 37)				
Decrease feed and supplies (p. 36)				
Total	→		→	
Farm income				
Interest on investment at ___ per cent [2]				
Labor income				
Value operator's labor (___ mo.)				
Per cent return on investment [3]				
Value items for family use (pp. 31 to 34)	→		→	

[1] Use average investment or that of beginning of year, whichever more nearly represents the true capital invested in the year's business.
[2] Use current rate of interest on well-secured farm loans.
[3] After deducting value of operator's labor from farm income.

STATEMENT OF NET WORTH.

	Beginning of farm year.	End of farm year.
RESOURCES: [1]		
All cash on hand		
Real estate (p. 36)		
Live stock (pp. 32, 33)		
Machinery (p. 37)		
Feed and supplies (p. 36)		
Household equipment		
Automobile		
Other tangible property		
Accounts owing to you		
Notes owing to you		
Mortgages owing to you		
Bonds and stocks owned		
Interest due you or accrued on notes, mortgages, and bonds		
Total resources		
LIABILITIES: [2]		
Accounts owed by you		
Notes owed by you		
Mortgages owed by you		
Interest due or accrued and owed by you		
Total liabilities		
Total net worth [3]		
Increase or decrease in net worth [4]		

[1] Includes all property owned by you and owing to you
[2] Includes all amounts which are owed by you to some one else.
[3] Subtract total liabilities from total resources.
[4] If total net worth at the end of the year is greater than at the beginning of the year the difference is an increase; if less, a decrease.

XUM

SOME MEASURES OF SUCCESSFUL FARMS.[1]

	This farm.	Average of farms of same type in locality.
SIZE OF BUSINESS: Farm area		
Crop area		
Months of man labor [2]		
Number of work stock		
Number animal units [3]		
Number cows		
Days of productive man labor [4]		
INVESTMENT: Per cent of investment in real estate		
In buildings per crop acre		
In machinery per crop acre		
CROP RETURNS: [5]		
LIVE-STOCK RETURNS: [6]		
Returns per $100 invested in live stock		
EFFICIENCY OF LABOR: Crop acres per man		
Crop acres per horse		
Productive work days per man		
Productive work days per horse		
COSTS: Total value of farm feeds consumed by live stock [7]		
Total value of purchased feeds consumed by live stock		
Total feed cost per animal unit		
Total value of man labor [8]		
Per cent total expenses are of total receipts		
Per cent total feed cost is of total live-stock returns		
Net returns per $1 of labor		
Labor cost per productive work day		
PROFITS: Labor income		
Per cent return on investment		

[1] Designed for general application; record important measures for a given farm or locality. The value of any given measure will vary with the kind of farming and section of the country.

[2] Add months of hired labor, p. 35, family labor, p. 38, and farmer's labor, p. 38.

[3] An animal unit is used as the basis for comparing different kinds of animals and represents one mature horse, cow, or steer, or as many smaller animals as require the feed of these. Usually 2 head of young cattle or colts, 7 sheep, 14 lambs, 5 hogs, 10 pigs, or 100 chickens are each equivalent to one animal unit.

[4] The productive days of man labor represent the number of days of labor that should ordinarily be required to care for the live stock and raise the crops. See Table I, page 19, for approximate time required for various crops and classes of live stock and make computations for a given farm accordingly.

[5] Record important crops and yields per acre or receipts. Crop record, pages 30, 31.

[6] Record important measures of good live stock such as production or receipts per cow, receipts per ewe, receipts per sow, etc. Live stock and live stock products records, pp. 32, 33, and 34.

[7] Find the value of all crops fed from crop record, pages 30, 31, plus a charge for pasture, p'us or minus the difference in feed inventory, page 36.

[8] Add value of all hired labor, p. 35, plus family labor, p. 38, plus farmer's labor, p. 38.

XUM

U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No 1139 rev. Jan. 1925

A METHOD OF ANALYZING THE FARM BUSINESS

XUM

A FARM to be successful should maintain its productivity and should return a reasonable wage for the labor of the farmer and his family, after paying farm expenses and deducting a fair rate of interest on the investment.

Four important factors in the success of a farm business are size of business, yield of crops, returns from livestock, and efficiency in the use of labor.

What is the size of your farm business?

What part of your investment is in land, buildings, livestock, machinery, and other capital?

Are your crops properly proportioned for greatest returns?

How do your crop yields compare with the average yields of the locality?

What classes of livestock return you the most money?

How do the returns from your livestock compare with the average of your locality?

How many acres of crops do you raise per man? Per horse?

Is your farm so organized that each part of the business is yielding satisfactory returns?

How much have you left for your own labor after deducting from your total receipts your year's expenses, value of labor performed by members of your family, and interest on your investment?

How much does the farm contribute toward your family living?

This bulletin outlines a system of analyzing the farm business, designed to help the farmer answer such questions as these and thus locate the strong and weak points in his plan of management.

Record your year's financial transactions in the blanks provided in this bulletin and apply the tests of farm efficiency to your own business.

Washington, D. C.

Issued June, 1920
Revised January, 1925

A METHOD OF ANALYZING THE FARM BUSINESS

By H. M. DIXON, *Extension Economist, Extension Service, and* H. W. HAWTHORNE, *Associate Agricultural Economist, Bureau of Agricultural Economics*·

CONTENTS

	Page		Page
What an analysis shows	1	Blanks for use in analyzing the farm business and determining the farm income	21
Farm accounts	2		
Method of farm analysis	2		
Factors affecting farm profits	10		

WHAT AN ANALYSIS SHOWS

THIS BULLETIN aims to assist farmers to a better understanding of the financial side of their business. It outlines a method of analyzing the farm business to determine the capital, receipts, expenses, and profits. It includes blanks for making such an analysis and recording the amount and value of farm products contributed toward the family living. Thousands of farms have been studied by this method within the past few years, with the object of analyzing their operations from a business standpoint and learning the more important reasons for their success or failure. Experience shows that it is not always possible to distinguish profitable farms merely by casual observation. Where a farm is operated as a large business, if free from debt, even a low rate of interest on the capital invested, without any wages for the operator, may return sufficient funds to give the place a prosperous appearance. In other cases an appearance of prosperity may be due largely to income from outside sources. A farm can not properly be called successful unless it pays a fair rate of interest on the capital, returns fair wages for the farmer's labor, and, at the same time, maintains or increases the fertility of the soil.

Most farmers have the details of their business sufficiently well in mind for purposes of analysis, but they are not always able to summarize these details into a concrete statement. They realize that the gain from a large business should be more than from a small one, that good cows are more profitable than poor ones, and that good crops are more desirable than those that barely pay for harvesting. Their main difficulty is that they have no convenient way of determining just how good or how poor the business really is; in other words, no way of measuring its efficiency. With such an analysis as outlined here, a farmer can more readily find the strong and weak points in his system of management and make changes with some assurance that they will result in greater profits.

NOTE.—A part of this material was issued in 1915 as Farmers' Bulletin 661, by E. H. Thomson and H. M. Dixon. Several years' experience with the application of this method to the business analysis of a large number of farms makes this revision possible.

XUM

Agricultural teachers, county agents, and other extension workers, as well as farmers, will find the blanks used in this form of analysis helpful. Teachers may give copies to their pupils for use in making records of their home farms. These records may then be summarized and furnish information to both teacher and pupils concerning economic phases of the local agriculture. Groups of farmers assembled for a discussion of the economic side of their business may find the blanks of value, as arrangements can be made so that each farmer can be furnished a copy to figure his own farm profits. Later meetings may be devoted to a discussion of the results. Work of this kind will help reveal the true status of the local agriculture and show some of the problems confronting the farmers and aid in their solution.

The blanks may also be filled in by individual farmers and sent to the State agricultural college or to the United States Department of Agriculture for suggestions.

FARM ACCOUNTS

Farm accounts may be grouped into two classes: (1) Those pertaining to the farm business as a whole, or "financial accounts," and (2) those pertaining to an anaylsis of the various enterprises, commonly called "cost accounts." The method presented here pertains to the analysis of the farm business as a whole. In order properly to analyze each enterprise it is necessary in addition to this analysis to obtain labor and other records for all the enterprises and feed records for each livestock enterprise.

In making a record of the farm business, accounts are of value. Many farmers have a record of the more important financial transactions. The accounts will vary on different farms, but a memorandum of all farm receipts and expenses is valuable when summarizing the year's business. Farm accounting is more a question of knowing what accounts to keep and what use to make of them than of the kind of form or blank. This method of farm analysis will suggest the accounts of most value.

The extension service of the State college of agriculture in most States has prepared a simple farm account book. Information regarding these books may be obtained through the county agricultural agent or by applying direct to the State college of agriculture.

METHOD OF FARM ANALYSIS

The blank forms outlined on pages 21 to 32 have been prepared for use in determining the net income from the farm business. Space is also provided for recording the amount and value of farm products furnished the family. The wide variation in the kinds of farming carried on in different parts of the country renders it impracticable to prepare a single set of blanks for all conditions. The forms are, therefore, rather general, and it may often be necessary to insert items not listed. The blanks have been designed for use in analyzing the business of a farm operated by either the owner or tenant.

FARM TENURE

In farm-management studies a farm is usually understood to be all the land operated as one unit. Exception may be necessary. For instance, if the operator rents out single fields it may be well to include his share of the returns from the rented-out areas. The farm may consist of both owned and rented land, if all, or nearly all, this area is operated by one set of machinery, horses, workmen, etc. When a man owns two farms, operated rather independently of each other, they are considered separate farms. The operator is the person responsible for the year's farming operations. Thus, if an owner directs the farm operations he is the operator; but if a renter directs the operations, the owner is the landlord and the tenant is the operator.

The cropper, share hand, halver, or tenant laborer usually furnishes the manual labor and little or none of the working equipment. He, therefore, bears close relation to the wage hand, the main difference being that he is paid a share of the farm products instead of cash wages for his services. The farm operator furnishes all or nearly all the capital, pays nearly all the expense and exercises most of the supervision of the business. Such a proposition may be considered a part of the farm business, and the value of the share of products received by the cropper or share hand, minus any expense other than labor paid by him, may be inserted as the expense for "cropper" labor (blank form, p. 27). The value of the products he received must also be included in the receipts, and the other expenses he paid included under "Current expenses." The operations of croppers or share hands who furnish any considerable part of the operating equipment and operate a part of the farm independently of the rest of the business should usually be handled as separate propositions. The blank is designed for handling such propositions in the way which seems to represent best the conditions on the individual farm.

FARM INVENTORY

An inventory is a list of the amount and value of all farm property. In any method of analysis the farm inventory is important, and space is provided for making the inventory at the beginning and end of the year. It shows whether the business has increased or decreased during the year. Whether the year as a whole has been profitable cannot well be determined without the inventory.

In the farm inventory the date when the farm year begins varies. Some farmers begin their year's accounting on January 1; others find some other date desirable. In some sections the time tenants ordinarily change farms is chosen. Many farmers close accounts at March 1 or April 1, the time of year in many regions when practically all feeding operations from the preceding year have been completed. The fundamental principle in taking an inventory is to choose a time when the least feed and unsold products are on hand.

FARM AREA

The farm area (blank form, p. 21) should include all land operated as one farm. The acreage is separated into eight divisions according

to utilization. If more than one crop is grown on any of the land during the year the acreage should be counted but once for determining the "acres in crops."

CROP RECORD

In the form on pages 22 and 23 space is provided for recording the acreage and yield of each crop, the amount and value of the operator's or the landlord's sales, and the amount and value of crops for family use. Crops grown that are not mentioned in this schedule should be written in, using the blank space or spaces provided by scratching out the names of crops not grown in the locality. The sum of the acres in the several crops should equal the "Acres in crops" shown on page 21. If a second crop is grown on any of the fields during the year, the acreage should be "ringed" (as ㉘) to avoid confusion in adding the acres in crops. Under "Sales" all amounts sold from the farm or held for sale should be entered. Crops fed to livestock on the farm should not be included as sales. Crops held for sale from previous years should not be inventoried, as they are a part of the previous year's business, but crops held from the previous year for feeding on the farm must be inventoried under "Feed and supplies" (p. 28).

On tenant farms any portion of the tenant's share of crops sold or held for sale is listed under the heading "Operator's sales." Any of the landlord's crops sold or held for sale are listed under "Landlord's sales." Where the landlord transfers any of his share of crops to another farm, the value of these are entered as sales for the farm from which removed. When farmers operate their own farms and rent additional land, the crops sold from their own farm or their share sold from rented land should be entered under the heading "Operator's sales."

LIVESTOCK RECORD

The form for the livestock record, pages 24 and 25, provides for a record of the number and value of all kinds of livestock at the beginning and at the end of the year, of all sales and purchases within the year, and of the number and value of all animals that died or have been killed and used by the family within the year. A record of livestock furnished hired labor is important on some farms, and should be recorded. There may be a variation in the number of any kind of livestock at the beginning and end of the year, according to the number bought, sold, raised, died, or slaughtered. The number of each kind of livestock on hand at the beginning of the year, plus the number purchased and raised, minus the number sold, that have died, and have been slaughtered, must equal the number on hand at the end of the year. Animals appearing in one class in the first inventory may appear in a more mature class in the second inventory, and animals born within the year may appear as sales and not in the inventories. The number of dairy cows is often increased during the year from animals classed as heifers in the first inventory. The number of heifers or steers may be increased during the year from animals classed as calves in the first inventory or by purchases. All livestock both born and sold during the year will appear as sales, but not in the inventory. Conservative market

prices should govern the livestock inventory values. On all farms except those on which the landlord has a share of the livestock the record is made under the heading "Operator's livestock."

Livestock products.—Record in the form, page 26, the amounts and values of all livestock products sold, such as milk, butter, eggs, wool, etc. Any of these products exchanged for groceries and other supplies should be entered as sales. The principle to follow in recording the year's farm receipts is to include as receipts the value of all farm products leaving the farm, whether sold or given in exchange. Space is provided for entering the amount and value of livestock products taken from the farm for family use.

Livestock summary.—"Livestock summary" (p. 26) provides for a concise statement of the business transactions for each kind of livestock and for the entire livestock enterprise. For each kind of livestock add receipts from livestock products and from sales and the inventory value at end of year. From this sum subtract the sum of the purchases, plus the inventory value at beginning of year. The result is the increase or decrease in the financial transactions for each kind of livestock and for the total livestock enterprise.

OTHER SOURCES OF INCOME

The heading "Other sources of income" (p. 26) provides for recording such items as money received for man or team labor, machine work, and other sources of income outside the farm business to which some part of the business contributed. The value of dwelling, wood for fuel, and other items of home supplies furnished by the farm is placed in the space provided. Rent received from tenant houses or other buildings on the farm is a receipt, when the values of such buildings are included in the farm real-estate value. Where the value of "Feed and supplies" is greater at the end of the year than at the beginning, the difference is a receipt to the year's business, and may be transferred direct from the form, page 28, to the summary, page 30.

FARM EXPENSES

Farm expenses may be considered under five divisions: (1) Current expenses, (2) family labor, (3) decrease in value of feed and supplies, (4) livestock decrease, and (5) depreciation charges.

Items of farm expense vary with the kind of farming and the region. Items not included in the list, page 27, should be written in.

Current expenses.—Expenses for paid labor constitute an important item on many farms and should be carefully computed and entered. For the board of hired labor either of two methods may be used in arriving at a charge: Entire expense for the board of hired labor may be charged and the proportion of the board furnished by the farm carried as a receipt to the enterprises contributing, or the charge for board may be made for only the food purchased. The final result for most farms is practically the same by either method.

The next items of current expense relate to repairs of machinery, buildings, fences, drains, terraces, etc. These are an important part of the expense of operating a farm. Determining the proper amount of expense to charge against each of these items for a given year is often perplexing, because extensive repairs may be made within one

XUM

year that will last over several years. Therefore space is provided for recording the expense for repairs of buildings, machinery, fences, etc., along with inventory values and depreciation charges (pp. 28 and 29). If the expense for repairs and improvements has not more than maintained the value of the farm, the entire expense may be charged against the one year's business. If the expense for repairs for the year is more than is necessary for maintaining the buildings, machinery, etc., the normal expense should be calculated as the charge to the year's business. (For machinery, see p. 29, for buildings, etc., p. 28). The other items of expense are self-explanatory. In several instances space is provided for recording quantities such as number of months of labor, amount of fertilizer, etc. The item "interest" refers to interest paid upon money borrowed within the year to carry on the business, or for purchase of feeding steers, lambs, etc., not represented in the farm inventories, and does not refer to interest on the farm mortgage.

Unpaid family labor.—Value of unpaid family labor is an expense chargeable to the farm business and is provided for in the summary form, page 30. It is determined on the basis of what it would cost to have the same work done by hired help or the amount of additional labor that the operator would have had to hire to carry on the same-sized business had family labor not been available.

Feed and supply decrease.—Where the value of feed and supplies is less at the end of the year than at the beginning the difference is an expense. This expense should be calculated from the feed and supply record, page 28, and transferred to the summary, page 30.

Livestock decrease.—If the value of livestock at the end of the year, plus the sales, is less than the value of livestock at the beginning of the year, plus purchases, the difference represents a loss and should be charged as an expense. This seldom occurs, except in case of disease or marked decrease in market value. This may be determined from the livestock summary, page 26, and if a decrease exists it may be transferred to the proper space in the farm summary, page 30.

Depreciation of equipment and buildings.—In addition to current farm expenses there are certain other items, such as depreciation, which may be called fixed charges. These occur on all farms, though in varying degree. Buildings may be constructed so that they will last for 100 years, or they may have to be rebuilt every 25 or 30 years. The life of machinery depends on the care given and the extent it is used. Although there is no appreciable expense each year, these buildings and machines eventually must be replaced. A proportionate share of this replacement cost should be charged against the farm each year; otherwise whenever a new barn or dwelling is built the entire cost would have to be charged against the business for that year. Depreciation charges, therefore, are merely a method of distributing these costs over the period of years that they are in use. The amount of depreciation that should be charged each year as an expense is left to the judgment of the farmer. No set rules can be given, as no two farms are exactly alike in this respect. The sum of the amount of depreciation on machinery (p. 29), plus the depreciation of buildings, fences, etc. (p. 28), represents the amount to be transferred to the farm summary.

FARM CAPITAL

Farm capital includes the value of all real estate, livestock, machinery and equipment, feed and supplies, and cash to run the business.

Real estate and improvements.—A record of the real estate and improvements is valuable when in sufficient detail to make possible a study of the essential considerations. The space under "real estate," page 28, is for recording the value of the farm, including buildings, fences, and water supply. Conservative market values should be used, and not high speculative prices or low assessed valuations. When values are too high or too low the results are of little use in analyzing the farm business. The total amount of capital used in conducting the farm business is necessary in determining the year's profits, regardless of whether a part is borrowed. Space is provided in this blank for recording the value of the buildings, fences, drains, etc., at the beginning and end of the year, the value of improvements made during the year, the value of property sold or salvaged, depreciation charges, and expenses for repairs. Ordinarily it is not necessary to inventory the fences, drains, etc., as the annual repair charge will usually care for these. In most instances it will therefore be found more practical to carry through the inventories only the building valuations. Labor expended in the construction of new buildings, tile drains, or other improvements, should be included with the expense for materials under the proper headings in the real estate and improvements record, and should not be entered under labor in the current expenses, page 27. Both repairs and depreciation are legitimate expenses in conducting a farm business. The essential point is that in arriving at a fair charge for either item, both must be considered. On one farm the improvements may be kept in first-class repair, in which case the depreciation charges are low and the repair charge high, while the reverse may be true on another farm. The amount chargeable for a given year as a depreciation expense and as a repair expense does not depend so much upon the actual outlay for the one year as upon the practice over a period of years. Therefore, space is provided under "repair expenses" for recording both the repair expenses for that year and the average, or what is normally expended for repairs. The expense for depreciation may be derived either by the inventory method—that is, by adding to the value at beginning of the year the value of improvements or new equipment added during the year, and subtracting from the sum the value at end of year plus value of property sold or salvaged—or on the basis of the years of remaining life. The years of remaining life basis has been found satisfactory for many farms.

In computing the farmer's income it is not necessary to include in the farm summary expenditures for improvements (see form, p. 28), because if they are included they appear both in the expense items and in the inventory items showing an increase, so the entries cancel each other in final calculations. The record of such improvements may be made as a memorandum and the value of such investments will appear as additional capital for the following year's business.

Livestock.—The method of arriving at the capital in livestock, pages 24 and 25 is explained on pages 4 and 5.

121844°—39——2

Machinery and equipment.—Record on page 29 the capital and outlay in machinery and equipment. Value for each item should be a fair price for it as compared with a new machine, according to its condition at the date of the record. Record values at the beginning of year, purchases, sales, value at end of year, depreciation charges, and repairs. Depreciation charges may be determined either through the method of taking the difference between value at beginning of the year plus purchases, and value at end of the year plus sales or salvage, or on the basis of the years of remaining life of the machinery. While this blank provides for data on each item of machinery, less detail is sufficient on many farms.

Feed and supplies.—Quantity and value of feed and supplies on hand at beginning and at end of the year is important, as any increase or decrease represents a gain or loss (p. 28). Importance of this record to the business as a whole varies with the time the farm year begins. If it begins on April 1, ordinarily only enough roughage or grain is on hand to last until the new crops are harvested. Grains or hay held for sale are not included with those held for feeding purposes. The reason for accounting for these items of feed and supplies is that they form a part of the farm investment, and also represent an increased or decreased item of income in the year's business.

Cash.—The item of "cash to run the farm" should represent the average amount of money the farmer has on hand during the year to pay current farm expenses; in other words, the average of his checking account above money used for personal and household expenses. This varies, not only from farm to farm but with the type of farming, as a dairy farm returns an income every month of the year, while a cotton or tobacco farm returns most of the year's income within one season. The amount of cash necessary to run the business will range from $100 to $1,000 on most farms.

FARM SUMMARY

The form on page 30 is for a summary of the farm business. The items are from the totals in the preceding forms, as follows:

Investment.—To determine the amount of capital invested in the year's business, use either the average at beginning and at end of the farm year, or that at beginning of the year, whichever more nearly represents the true capital invested in the year's business. Conditions on the farm should govern this. If real estate improvements are made, additional equipment purchased, or additional livestock added early in the year and used in the year's business, then the average at the beginning and end of the farm year should be used. If such changes are made late in the year, then the amount at the beginning of the year will probably more nearly represent the capital in that year's business. For real estate capital, calculate and transfer from page 28; for livestock, from pages 24 and 25; for machinery and equipment, from page 29; and for feed and supplies, from page 28. Insert the amount of cash used to run the farm.

Receipts.—Under receipts enter totals for crop sales from page 23, for livestock net increase from page 26, for receipts from other sources from page 26, and for the increase, if any, in feed and supplies from page 28.

Expenses.—Under expenses, enter the totals for current expenses from page 27, for unpaid family labor (compute this figure as explained on page 6), for livestock net decrease, if any, from page 26, for depreciation of buildings and machinery from pages 28 and 29, and for decrease in feed and supplies, if any, from page 28.

Farm income.—Subtract the total expenses from the total receipts and the result represents the farm income, which is the money received for the use of the capital and pay for the operator's labor.

Labor income.—Capital has an earning power which at least equals the current rate of interest on well-secured farm loans. Interest at this rate, deducted from the farm income, gives the farmer's labor income. The labor income represents the amount the farmer has left for his labor after paying all business expenses of the farm and deducting interest on capital. In addition, the farmer has the use of the farmhouse and the products furnished by the farm toward his living, such as fruit, garden vegetables, dairy products, and fuel.

The difference between receipts and expenses, which represents the farm income, will not necessarily correspond to the money on hand or in bank, as personal and living expenses are paid out of this amount. In the case of farmers with mortgages or other debts, the interest on these and any principal paid also come out of the farm income. Therefore the business may show a fairly large difference between receipts and expenses, and yet the farmer may not have the cash to show for it at the end of the year, because the funds have been spent for living or for personal uses or have been put into other investments, such as life insurance or paying off the mortgage. The object of this record is to analyze the farm business; to ascertain how much the farmer makes, not how much he actually saves. To find the net worth at the beginning and end of the farm year a form is provided on page 31.

Percentage return on capital.—Another way of expressing farm profits is to allow the farmer the value of his year's work as an expense and find the percentage return on capital. For many farms, especially those where practically all labor is hired, the percentage return on capital may be the most satisfactory way of indicating farm profits. For determining this figure subtract the value of the farmer's own labor from the farm income and divide the result by the capital.

The value of the farmer's own labor is an allowance for the services of the farmer for labor and supervision at the rate at which he would have to pay another man to take his place. This is exclusive of farm dwelling and farm products used by his family.

Farm supplies for family use.—In carrying this to the summary, add the values shown under the crop record, page 23, livestock record, pages 24 and 25, livestock products, page 26, and other sources, page 26.

Statement of net worth.—In addition to the analysis of the year's farm business, it is of interest and value to prepare a statement of net worth, or balance sheet, to show the financial worth at a given time. The net worth represents the difference between the resources, which include all property owned by you and owing to you, and the liabilities, which include all amounts owed by you to some one else.

XUM

The form on page 31 is for computing the net worth at the beginning and end of the year. The difference between the total net worth for these periods will represent the increased or decreased net worth for the year. Some of the figures may be carried forward from other forms as indicated. From the standpoint of borrowing capital, the net worth statement in addition to the year's business analysis is very important. The analysis of the year's business shows what has been accomplished through the year's farming operations. The net worth statement shows the value of all the farmer's property, and how much the farmer got ahead during the year.

FACTORS AFFECTING FARM PROFITS

There are a number of factors which materially affect success in the organization and management of farms. Some are of greater importance than others, some may be disregarded without serious consequences; but as a rule the profits derived from farming depend very largely upon the extent to which certain essential features of organization and management have been adopted and adhered to.

TYPE OF FARMING

The first consideration is the type of farming followed, which must be adapted to soil, climatic, and labor conditions, and especially to local conditions with reference to markets and market facilities, as well as to the business conditions existing on the individual farm.

Profits in farming are greatly affected from year to year by conditions over which the farmer has little or no control. Probably the most important, in most regions, are nature of the soil and yearly variations from year to year in weather conditions and prices. There are other conditions which one man alone can not control but which require the cooperation of an entire community for best results, such as maintaining and improving public roads and public schools, or other social, educational, and economic phases of farm development.

There is another group of factors affecting farm profits over which the individual farmer may have nearly entire control. From a study of these factors it is usually possible to determine both the good points and the deficiencies in a system of farming, and steps for improvement may be taken accordingly, with some assurance of a better income. On a majority of farms success is primarily dependent upon four important factors: (1) Size of business, (2) yield of crops, (3) returns from livestock, (4) efficiency of labor. Many other factors have their influence, and must not be overlooked on a given farm; for instance, the wise expenditure of capital is important. Overcapitalization in the way of paying too much for land, having too many or too expensive buildings, too much machinery, too high-priced work stock, etc., are very important, and yet a farm must be efficiently equipped. Again, in obtaining a good return from livestock the efficiency in feeding is important. Farm-management studies show, however, that the farmer whose business is efficient in the four factors outlined is generally successful. Farms that excel in none of these respects usually fail. Those deficient in one or two may succeed, but their chances of success are greatly lessened.

SIZE OF FARM BUSINESS

In comparing farms with respect to size or volume of business, some of the more important factors considered are size of farm, acres in crops, amount of livestock, amount of capital and amount of labor required in operating the farm. On farms where one enterprise predominates, such as a specialized cotton, fruit, or dairy farm, the best measure of size of business may be the acres in cotton, acres in fruit or number of cows. Amount of labor required in operating the farm may be used to advantage in comparing farms of different types. Twenty acres of truck crops may equal 200 acres of grain, hay and general livestock, both as to labor required and income received.

The approximate amount of labor required to raise some of the more important crops and care for the livestock is shown in Table 1, based on labor data covering thousands of farms:

TABLE 1.—*Approximate days of work required for the production of crops and in caring for livestock*

[A work day is 10 hours of man or horse labor]

Operations	Number of work days (10 hours each)		Operations	Number of work days (10 hours each)	
	Man labor	Horse labor		Man labor	Horse labor
Production of crops (per acre):			Production of crops—Continued.		
Timothy, alfalfa and clover hay, per cutting	1	1	Onions, Ohio, grown from seed (sold in bunches)	149	10
Oats, wheat, barley, rye, buckwheat, and millet	2	3	Tomatoes, Northern States	15	11
Corn husked from standing stalks	2	4.5	Tomatoes, Florida	17	7
Corn husked from shock, or for silo	5	5.5	Cucumbers, Florida	32	10
Corn for silo, Central States	3	5.5	String beans, Florida	22	7
Corn husked, Southern States	4	4	Radishes, Ohio (sold in bunches)	45	5
Sorghum cut for hay	3	3	Beets and carrots, Ohio (sold in bunches)	82	8
Potatoes, Northern States	11	10	Strawberries, Florida	74	9
Potatoes, Southern States	13	7	Citrus Fruits, Southern States [2]	10	7
Sweet potatoes	10	5	Apples	15	5
Sugar beets [1]	6	10	Caring for livestock (per year, except feeding steers and feeding sheep):		
Sugar cane for sirup, Georgia	16	7	Horses, Corn-Belt States	8	.75
Tobacco, Kentucky	35	8	Horses, Eastern States	12	.75
Cotton	13	6	Dairy cows	18	2
Peanuts (harvested), Georgia	5	3	Young stock, cattle, colts, etc	2.5	.2
Peanuts (hogged off), Georgia	3	2	20 feeding steers per month	2	1.5
Watermelons, Georgia and Florida	5	4	10 hogs, Corn-Belt States	10	2
Field beans	4	5.5	10 hogs, Eastern States	20	2
Rice, Louisiana, Arkansas, and Texas	3.5	5.5	10 brood sows and raising pigs to weaning	30	5
Cabbage, Northern States	13	12	100 ewes	50	5
Cabbage, Southern States	20	8	100 feeding sheep, yard lots, per month	3.5	3
Onions, Texas (sold by crate)	68	14	100 chickens (well cared for)	20	2
Onions, Ohio, grown from sets (sold in bunches)	93	10			

[1] Does not include contract labor.
[2] Exclusive of picking, packing, and hauling of fruit.

A work day represents 10 hours of labor. It requires on the average 10 hours of man labor and 10 hours of horse labor to cut and store an acre of hay per cutting. Therefore, an acre of hay on the average represents the work of one man and one horse for one day.

The amount of labor required on other enterprises varies considerably from that for hay. Innumerable factors influence the time required for most farm operations, but the standards shown in this table approximate average conditions in many areas. These, or such modifications as local experience may render advisable, may be used in working out the amount of man and horse labor required for the productive enterprises on a given farm.

In Table 2[1] the farm profits for small, medium, and large-sized business are shown for a number of areas. The farms are divided in size-groups on the basis of the measure which seemed to indicate best the size of business for each area under study.

TABLE 2.—*Size of business*

Areas	Number of farms	Labor income, average of farms with—			Percentage return on investment, average of farms with—		
		Small business	Medium business	Large business	Small business	Medium business	Large business
Gloucester County, N. J.	125	$686	$867	$1,479	7.8	8.6	11.2
Frederick County, Md.	150	189	304	611	3.4	4.6	5.8
Chester County, Pa.	502	475	816	1,242	7.0	9.2	10.4
Mercer County, Pa.	349	221	282	354	2.6	4.1	4.9
Washington County, Ohio	25	148	228	432	1.9	3.4	5.8
Clinton County, Ind.	100	342	518	828	5.0	5.6	5.7
Lenawee County, Mich.	453	340	501	725	4.3	6.1	6.2
Dane County, Wis.	60	278	408	542	3.1	4.5	4.9
Tama County, Iowa	210	943	1,587	1,837	4.6	5.7	5.6
Warren County, Iowa	184	555	431	918	3.5	3.2	4.6
Barry and Lawrence Counties, Mo.	244	180	291	628	3.2	5.1	7.4
Palouse area, Washington and and Idaho	246	221	328	756	5.4	6.5	7.4
Skagit County, Wash.	202	66	94	244	2.2	3.2	5.2
Sumter County, Ga.	280	174	741	2,435	5.5	8.9	9.9

Many farmers realize but meager incomes because their business is small. Such men often feel that their farm business is sufficiently large to keep them busy the entire year, when, as a matter of fact, actual results accomplished represent less than a half year's work. An acre of hay normally requires 8 to 10 hours of man labor, or approximately one day's work for each cutting; an acre of wheat, 15 to 20 hours; an acre of potatoes, 80 to 110 hours; caring for and feeding a dairy cow, 150 to 200 hours per year. Only about 250 to 275 days are actually available for productive work. Much time is lost in doing jobs about the farm which take time, but count for little. A farmer may keep busy the whole year, but if he has accomplished during that time only such work as should normally be done in 200 days his wages will be in proportion. A large volume of business may be done on a farm of few acres, while only a small business may be conducted on a poorly-managed farm of much larger acreage. Without reasonable size of business there is little opportunity for a satisfactory profit in farming.

[1] For the study shown in Tables 2, 3, 4, and 5 the farms for each area were arranged into three groups. One-third of the farms for each area are, therefore, represented in the lowest group, one-third in the medium, and one-third in the highest group.

Ways of increasing size of business.—Some of the ways of increasing the size of the farm business are:

1. Buying or renting more land. Farmers owning or renting small farms often rent additional land. This permits the use of a larger area with comparatively little additional capital.

2. Growing crops requiring more labor, or following a more intensive form of farming. One hundred acres devoted to corn, oats, wheat, etc., which may not be sufficient to keep two men busy, can easily be increased to a full 2-man farm by adding a few acres of such crops as sugar beets, potatoes, or fruit, depending upon market demand. Many persons make the mistake of buying a small area, intending to do intensive farming in localities where there is no market for the products of such farming. That land is adapted to truck crops is not sufficient justification for growing them. There must be the possibility of disposing of the products at remunerative prices.

3. Adding more livestock, sometimes beyond the point where the farm itself will support them. This practice is followed by many dairy farmers in some of the Eastern States. It necessitates the purchase of feed if the nature of the land prohibits raising grain as cheaply as it can be bought, or if the production of roughages and succulent feeds is more profitable than grain growing. Loss may follow, unless the additional animals are of high-producing quality. This is the one way open to many farmers whose business is otherwise too small to make them a good living. Success of many farms is largely dependent upon the number of high-quality cows or other livestock that can be kept.

4. Performing work outside the farm, such as teaming or lumbering during the winter. In many farming regions the opportunity for this source of income is very limited.

No one realizes better than the farmer that as a rule no phenomenal profits can be expected, and persons going into farming as a business should consider this fact. Agriculture is a good life work; it will pay wages and moderate returns on investment, provided both capital and labor are wisely expended. Success is most difficult to attain, however, unless the farm business is large enough to permit the efficient use of capital, labor, and managerial ability.

Note: The number of farms, average size, labor income, year or years of study, and investigators in charge of the studies used in Tables 2, 3, 4, 5, and 6 are as follows: Gloucester County, N. J., 125 farms, average size, 81 acres, average labor income, $1,013, 3 years, 1914–1916, by G. A. Billings; Frederick County, Md., 150 farms, 140 acres, $368 labor income, 1915, by H. A. Miller; Chester County, Pa., 502 farms, 94 acres, $845 labor income, 1911, by H. M. Dixon; Mercer County, Pa., 349 farms, 101 acres, $285 labor income, 1916, by Earl D. Strait; Washington County, Ohio, 25 farms, average size, 158 acres, average labor income, $272, 7 years, 1912–1918, by H. W. Hawthorne; Clinton County, Ind., 100 farms, 126 acres, $558 average labor income, 7 years, 1910, by E. H. Thomson, 1913–1918, by H. M. Dixon; Lenawee County, Mich., 453 farms, 112 acres, $522 labor income, 1911, by H. M. Dixon; Dane County, Wis., 60 farms, average size, 148 acres, average labor income, $407, 5 years, 1913–1917, by H. C. Taylor; Tama County, Iowa, 210 farms, average size, 220 acres, average labor income, $1,378, 1918, by E. D. Strait; Warren County, Iowa, 184 farms, average size, 177 acres, average labor income, $637, by E. D. Strait, 1918; Barry and Lawrence Counties, Mo., 244 farms, 122 acres, $371 labor income, 1914, by W. J. Spillman and F. H. Branch; Palouse area, Washington and Idaho, 246 farms, 319 acres, average labor income, $436, 1914, by L. W. Fluharty; Skagit County, Wash., 202 farms, 46 acres, $152 labor income, 1915, by Harry Thompson and Earl D. Strait; Sumter County, Ga., 268 white owner farms, 418 acres, $470 labor income, 1913, and 280 white owner farms, 432 acres, $1,817 labor income, 1918, by H. M. Dixon and H. W. Hawthorne.

Cooperation: Mercer County, Pa., survey in cooperation with the Pennsylvania State Agricultural College; Washington County, Ohio, survey for the years 1912 and 1913, in cooperation with the Ohio Agricultural Experiment Station; Dane County, Wis., survey in cooperation with the Wisconsin State Agricultural College; Tama and Warren Counties, Iowa, surveys in cooperation with the Iowa Agricultural College; Sumter County, Ga., survey, 1918, in cooperation with the Georgia Agricultural College.

YIELD OF CROPS[3]

Crop yields greatly influence farm profits. Some farmers make fair profits with low yields because some other phase of the farm business is sufficiently developed to offset the poor yields, but doubtless these same farmers could make more money with higher yields. Profits increase at least until yields are obtained considerably above the average for the region, but beyond this limit very high yields may be obtained at the expense of farm profits.

In Table 3 farms for the various areas are placed in groups of those returning low yields, medium yields, and high yields, with the labor income and percentage return on capital. These show the importance of obtaining good crop yields if they are not obtained at too great expense. Other factors undoubtedly contributed toward making profits the greater on the farms with higher yields, but the fact that all areas show the same general results indicates the importance of this factor.

TABLE 3.—*Crop yields*

Area	No. of farms	Labor income, average of farms with—			Percentage return on investment, average of farms with—		
		Poor yields	Medium yields	Good yields	Poor yields	Medium yields	Good yields
Gloucester County, N. J.	125	$515	$923	$1,609	4.5	8.7	14.5
Frederick County, Md.	150	181	371	551	3.6	4.7	5.5
Chester County, Pa.	502	508	892	1,129	6.1	9.1	11.3
Mercer County, Pa.	349	129	303	423	1.4	4.5	5.8
Washington County, Ohio	25	165	284	364	2.0	3.9	5.2
Clinton County, Ind.	100	198	583	890	3.9	5.5	6.9
Lenawee County, Mich.	453	284	517	765	3.8	5.7	7.1
Dane County, Wis.	60	266	407	561	3.6	4.0	4.9
Tama County, Iowa	210	676	1,309	2,158	4.2	5.3	6.2
Warren County, Iowa	184	233	725	936	2.5	4.0	4.8
Barry and Lawrence Counties, Mo.	244	120	355	682	2.2	5.4	8.6
Palouse area, Washington and Idaho	246	119	434	750	5.1	6.5	7.8
Skagit County, Wash.	202	49	147	214	2.7	3.9	4.1
Sumter County, Ga.	280	57	1,124	2,230	4.2	8.5	11.5

[3] As a measure of the yields of crops either the yield per acre of each crop may be used, or the yields of all the crops grown may be reduced to a percentage comparative basis by the method shown, which is commonly known and referred to as "crop index." On farms where one crop predominates, the yield of that crop may be the best index of good yields, but where a number of crops are grown the use of the crop index will be found of value in making comparisons.

The crop index which is used as a measure of the yields on a given farm is found as follows: Suppose a given farm produces—

500 bushels of corn on ..... 10 acres.
200 bushels of wheat on ..... 10 acres.
25 tons of hay on ..... 20 acres.

Total ..... 40 acres

Suppose, further, the average yields in the locality are such that, on the average, farmers produce—

500 bushels of corn on ..... 7.7 acres (65 bushels per acre).
200 bushels of wheat on ..... 8.0 acres (25 bushels per acre).
25 tons of hay on ..... 16.7 acres (1.5 tons per acre).

Total ..... 32.4 acres.

The crop index of the farm in question is now found by dividing 32.4 by 40; that is, by dividing the acres required with average yields by the acres required on this farm to produce the given quantities of these products. In this case the crop index is 0.81. This means that the yields on this farm are approximately 81 per cent of the average of the community.

RETURNS FROM LIVESTOCK

On farms where livestock is an important enterprise, the quality of the stock is very important. On most farms, except in the South and certain Western States, more of the crops are fed to livestock than are sold direct. The animals are the market for the crops, hence their production is a most important factor in farm profits. The best of corn and hay crops will count for little when fed to animals that make returns below the market prices for these crops. On the other hand, good livestock may not be profitable if not fed and cared for economically.

In Table 4 is shown the effect of returns from livestock upon income when farms where livestock is an important enterprise are arranged in three groups according to whether they show poor, medium, or good production. Returns from livestock are measured by amount and value of product per animal.

TABLE 4.—*Returns from livestock*[1]

Area	Number of farms	Labor income, average of farms with—			Percentage return on investment, average of farms with—		
		Poor livestock returns	Medium livestock returns	Good livestock returns	Poor livestock returns	Medium livestock returns	Good livestock returns
Frederick County, Md.	150	$76	$285	$737	2.8	4.5	6.5
Chester County, Pa.	502	413	912	1,215	5.0	9.6	12.0
Mercer County, Pa.	349	136	244	473	1.4	3.9	6.3
Washington County, Ohio	25	54	243	528	.2	3.5	7.6
Clinton County, Ind.	100	82	605	995	3.6	5.7	6.9
Lenawee County, Mich.	453	208	543	817	2.8	5.9	7.8
Dane County, Wis.	60	—9	500	740	1.7	4.7	6.2
Tama County, Iowa	210	726	1,271	2,137	4.2	4.9	6.6
Warren County, Iowa	184	—70	631	1,339	2.0	3.8	5.5
Barry and Lawrence Counties, Mo.	244	223	317	541	3.2	4.5	7.7
Palouse area, Washington and Idaho	246	250	463	577	5.5	6.5	7.2
Skagit County, Wash.	202	—79	100	393	1.7	3.8	5.3

[1] Gloucester County, N. J., and Sumter County, Ga., areas are not included in this table because of the relative unimportance of the livestock industry.

EFFICIENCY IN THE USE OF LABOR

The exceedingly diverse nature of farm operations makes wide opportunity for inefficiency to enter into their performance. In a modern factory a man is expected to do a certain amount of work, and often the machine sets the pace for him. Generally the worker on the farm must be his own boss and must set his own pace. At certain times he must work under adverse weather conditions. Some work must be devoted to things which add little or nothing to the profits. It requires twice as much time for some men to do a certain kind of work as others. Work may be so organized that a given amount of effort accomplishes more than the average. Efficient use of horse labor is important and bears a close relation to

121844°—39——3

size of business. On the 1-man farm the horses are necessarily idle every time the farmer does work not requiring horse labor. On larger farms work can be so arranged that one man keeps the horses busy while others attend to work where horse labor is not needed.

In Table 5 is shown the effect upon farm profits of a low, medium, and high return for man labor. The common basis used for comparing efficiency in use of labor is that of crop acres per man. This is a satisfactory measure providing the farms are of the same general type. Where farms vary in type a good measure is the number of days of productive labor per man. Inefficiency in use of labor may be due to lack of opportunity, indifference of the operator, or many other factors. Whatever the reasons, results show that with a low return per man the profits are usually correspondingly small.

TABLE 5.—*Efficiency in the use of labor*

Area	Number of farms	Labor income, average of farms with—			Percentage return on investment, average of farms with—		
		Low labor returns	Medium labor returns	High labor returns	Low labor returns	Medium labor returns	High labor returns
Gloucester County, N. J.	125	$773	$1,120	$1,149	7.4	10.2	10.1
Frederick County, Md.	150	174	362	587	3.6	4.5	5.8
Chester County, Pa.	502	530	936	1,073	6.6	9.5	10.5
Mercer County, Pa.	349	239	256	361	3.0	3.9	4.6
Washington County, Ohio	25	181	305	332	2.0	4.5	4.7
Clinton County, Ind.	100	316	550	812	4.6	5.7	6.0
Lenawee County, Mich.	453	313	520	733	4.1	5.6	6.9
Dane County, Wis.	60	312	457	455	3.6	4.4	4.5
Tama County, Iowa	210	722	1,380	2,061	4.2	5.4	6.0
Warren County, Iowa	184	373	647	885	2.5	4.1	4.8
Barry and Lawrence Counties, Mo.	244	182	257	666	3.4	4.2	8.0
Palouse area, Washington and Idaho	246	95	242	944	4.8	6.4	8.0
Skagit County, Wash.	202	4	131	291	2.0	3.8	5.1
Sumter County, Ga.	280	532	1,224	1,675	5.0	8.8	10.5

EFFECT OF ALL FOUR FACTORS

Results shown in Tables 2, 3, 4, and 5 relative to effect of size of business, yield of crops, production of livestock, and efficiency in use of labor, are evident that no one of these is the determining factor for success. Size of business is very important, but a large business conducted without attention to these other factors often results in loss. Table 6 shows the effect upon profits of having 1, 2, 3, or all 4 factors (size of business, crop yields, production of livestock, or efficiency in use of labor) better than the average of the region. Those with 2 of these factors better than the average make more than those with only 1, and those with all 4 factors above the average far excel all others. Usually less than 10 per cent of the farms are better than the average in all 4 respects, while from 20 to 30 per cent in each area have only 1 factor better than the average of the region, and from 9 to 21 per cent are below the average in all four factors. (Table 6.)

TABLE 6.—*A comparison of farm profits when 1, 2, 3, and all 4 factors (size of business, crop yields, returns from livestock, and efficiency in the use of labor) are above the average of the region.*[1]

Area	Number of farms	Farms above the average of the region in—							
		One factor		Two factors		Three factors		Four factors	
		Per cent of total farms	Average labor income	Per cent of total farms	Average labor income	Per cent of total farms	Average labor income	Per cent of total farms	Average labor income
Frederick County, Md	150	28	$94	39	$400	19	$774	4	$1,288
Chester County, Pa	502	26	432	38	827	21	1,339	6	1,907
Mercer County, Pa	349	28	190	35	304	19	424	7	665
Washington County, Ohio	25	31	137	21	176	20	480	14	611
Clinton County, Ind	100	27	252	29	496	22	943	9	1,606
Lenawee County, Mich	453	24	321	36	467	20	930	7	1,241
Dane County, Wis	60	24	165	35	345	25	655	6	1,044
Tama County, Iowa	210	29	512	30	1,352	25	2,480	5	3,700
Warren County, Iowa	184	28	351	36	629	16	1,339	8	1,662
Barry and Lawrence Counties, Mo	244	22	168	26	450	18	527	13	898
Palouse area, Washington and Idaho	246	29	117	33	501	15	1,069	7	1,186
Skagit County, Wash	202	27	25	35	160	16	190	8	673

[1] Gloucester County, N. J., and Sumter County, Ga., areas not included in this table because of the relative unimportance of the livestock industry in these areas.

A well-balanced farm business is nearly always profitable. The farms that are as good or better than the average of their community in all four of the factors here mentioned seldom fail to make a good profit. Thus, if a farm is devoted to a type of farming adapted to its conditions, if it is as good or better than the average in size of business, yield of crops, production of live stock, and efficient in the use of labor, and is adequately and economically equipped, it is almost certain to be profitable. The weakest factor is the one that needs attention in improving the business. If the quality of the livestock is high, greater improvement in the farm business can usually be obtained by devoting attention to developing the size of the business or sale of cash crops, or increasing labor efficiency, rather than by further improving the quality of livestock.

Figure 1 (p. 18) illustrates graphically the data presented in Tables 2, 3, 4, 5, and 6. The chart shows the percentage the average labor income of each group is of the average of all farms of the area. The groups with small sized business returned only about 55 per cent of the average labor income of the area, while the groups with large sized business returned 158 per cent. The groups with poor crop yields returned 44 per cent of the average labor income of the area, while those with good crop yields returned 156 per cent. The groups having poor returns from livestock returned only 25 per cent of the average labor income of the area, while those with good returns from livestock returned 179 per cent. The groups of farms low in labor efficiency returned 54 per cent of the average labor income of the area, while those high in labor efficiency returned an average labor income equal to 155 per cent.

By a little closer study of the chart something of the relative importance of these factors in each area may be determined. For

XUM

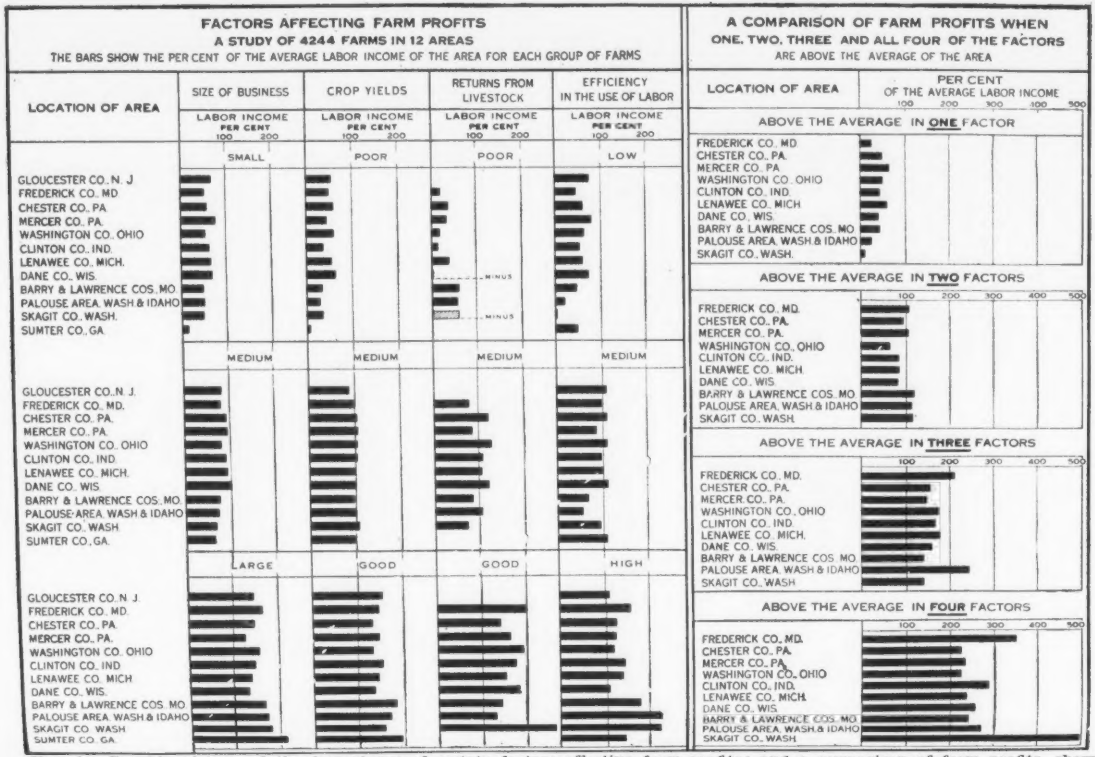


FIG. 1.—Graphic picture of the importance of certain factors affecting farm profits; and a comparison of farm profits, showing that the profits are relatively greatest in those cases where the factors are above the average for the community

example, in areas having the greater part of the receipts from livestock, there is more difference between the labor income of farms having poor returns and good returns from livestock than between those having poor crop yields and good crop yields—returns from livestock being the factor of greater importance. In areas having the greater part of the receipts from the sale of crops, there is more difference between the labor income of farms having poor crop yields and good crop yields than between those having poor returns and good returns from livestock—crop yields being the factor of greater importance. The areas in Mercer County, Pa.; Washington County, Ohio; Dane County, Wis.; and Skagit County, Wash., are livestock areas, while those in Gloucester County, N. J.; Barry and Lawrence Counties, Mo.; Palouse area in Washington and Idaho; and Sumter County, Ga., are crop areas.

In the part of the chart showing a comparison of the profits on farms with 1, 2, 3, or all 4 of the factors above the average of the area, the labor income of the farms above the average of the area in but 1 factor seldom exceeds 50 per cent of the average labor income of all farms; and farms with 2 factors above the average of the area have labor incomes around the average of the area. The farms better than the average of the area in 3 factors have labor incomes about 75 per cent above the average of the area, while those better in all 4 factors have labor incomes 175 per cent above. About one-fourth of all the farms were above the average of the area in one factor, one-third in two factors, one-fifth in three factors, and less than one-tenth in all four factors.

FIG. 1.—Graphic picture of the importance of certain factors affecting farm profits, and a comparison of farm profits, showing size of business, type of business, and intensity of business in the areas studied.

PALOUSE AREA WASH & IDAHO
SKAGIT CO. WASH
SUMTER CO. GA.
XUM

BLANKS FOR USE IN ANALYZING THE FARM BUSINESS AND DETERMINING THE FARM INCOME

State_____

County_____

Township_____

Farm year beginning_____

Operator_____

P. O. Address_____

Landlord_____

P. O. Address_____

Location_____

Miles from market_____

Soil type_____

Topography_____

Farm Area

Acres owned_____	Acres in crops_____
Acres cash rented_____	Acres in tillable land lying out_____
Acres share rented_____	Acres in rotation pasture_____
Total_____	Acres in permanent pasture tillable____
Acres rented out_____	Acres in open pasture not tillable_____
Acres operated_____	Acres in woodland pastured_____
_____	Acres in woodland not pastured_____
_____	Acres in waste lands, roads, etc_____

Crop Record

Crops	Acres	Yield		Operator's sales			Landlord's sales			Family use	
		Per acre	Total	Amount	Price	Value	Amount	Price	Value	Amount	Value
Cotton, wages											
Cotton, croppers											
Cottonseed, wages											
Cottonseed, croppers											
Corn for grain											
Corn fodder											
Corn for silage											
Other corn											
Wheat											
Rye											
Oats											
Barley											
Buckwheat											
Seed, clover or timothy											
Straw											
Hay, clover or timothy											
Alfalfa (_____cuttings)											
Cowpea hay											
Soybean hay											

Peanuts												
Velvet beans												
Beans												
Tobacco												
Sugar beets												
Rice												
Sugarcane												
Sorghum												
Potatoes												
Sweet potatoes												
Turnips												
Melons												
Tomatoes												
Cabbage												
Onions												
String beans												
Apples, bearing												
Apples, nonbearing												
Peaches												
Pears, plums, cherries												
Grapefruit												
Oranges												
Tangerines												
Berries												
Garden												
Total												

Operator's Livestock Record

Kind	Beginning of farm year			End of farm year			Sales during year			Purchases during year			Died	Family use	
	Number	Price	Value	Number	Price	Value	Number	Price	Value	Number	Price	Value	Number and value	Number	Value
Horses															
Mules															
Colts (____)[1]															
Cows															
Heifers over 1 year															
Calves under 1 year (____)[1]															
Bulls															
Steers over 1 year															
Ewes															
Lambs under 1 year (____)[1]															
Brood sows															
Other hogs															
Pigs (____S. ____F.)[1]															
Chickens															
Turkeys															
Ducks															
Total															

[1] Record number of calves, colts, lambs, and spring and fall pigs born during year.

[1] Record number of calves, colts, lambs, and spring and fall pigs born during year.

LANDLORD'S LIVESTOCK RECORD

Kinds	Beginning of farm year			End of farm year			Sales during year			Purchases during year			Died	Family use	
	Number	Price	Value	Number	Price	Value	Number	Price	Value	Number	Price	Value	Number and value	Number	Value
Horses															
Mules															
Colts (____)[1]															
Cows															
Heifers over 1 year															
Calves under 1 year (____)[1]															
Bulls															
Steers over 1 year															
Ewes															
Lambs under 1 year (____)[1]															
Brood sows															
Other hogs															
Pigs (____S.____F.)[1]															
Chickens															
Turkeys, ducks, geese															
Total															

[1] Record number of calves, colts, lambs, and spring and fall pigs born during year.

LIVESTOCK PRODUCTS

Items	Sales				Family use	
	Amount	Price	Operator	Landlord	Amount	Value
Butter, milk, cheese						
Eggs						
Meat						
Wool						
Breeding fees						
Hides						
Total						

LIVESTOCK SUMMARY

	Horses and mules	Cattle	Sheep	Hogs	Poultry	Total livestock
Livestock products (p. 26)						
Livestock sold (pp. 24, 25)						
Livestock end of year (pp. 24, 25)						
Total						
Livestock purchased (pp. 24, 25)						
Livestock begnning of year (pp. 24, 25)						
Total						
Increase [1]						
Decrease [1]						
Operator's net increase [1]						
Operator's net decrease [1]						
Landlord's net increase [1]						
Landlord's net decrease [1]						

OTHER SOURCES OF INCOME

Items	Receipts				Family use	
	Amount	Price	Operator	Landlord	Amount	Value
Man and team labor						
Machine work						
Rent—land, buildings						
Sirup and sugar						
Bees and honey						
Lumber, wood, etc						
Total						

[1] If sum of stock products, stock sold, and stock at end of year is greater than sum of stock purchased and stock at the beginning of year, the difference is increase; if less, decrease.

CURRENT EXPENSES

Items	Operator	Landlord
Year hands (_____ months)		
Month hands (_____ months)		
Day hands (_____ months)		
Cotton picking, chopping (_____ months)		
Cropper labor (_____ months)		
Contract labor (_____ months)		
Board of hired labor (_____ months)		
Repairs, machinery (p. 29)		
Repairs, dwelling (p. 28)		
Repairs, tenant houses (p. 28)		
Repairs, other buildings (p. 28)		
Repairs, fences (p. 28)		
Repairs, drains or terraces (p. 28)		
Feed: Roughage		
Feed: Grain, etc		
Pasture, bedding		
Feed grinding, silo filling, corn shredding		
Milk hauling, cow testing, ice		
Horseshoeing		
Veterinary, medicines, dips, etc		
Breeding fees, registry fees		
Seeds, plants, trees		
Fertilizer, wage land (_____ tons)		
Fertilizer, cropper land (_____ tons)		
Lime (_____ tons), manure (_____ tons)		
Spray material		
Twine		
Threshing, clover hauling		
Baling and wire, cotton ginning		
Other machine work hired		
Fuel and oil for farm work		
Auto for farm use		
Telephone		
Bags, cans, crates, barrels, boxes, etc		
Storage, freight, commission		
Advertising, auctions		
Insurance		
Taxes		
Water tax		
Cash rent		
Interest		
Total		

XUM

Real Estate and Improvements

[T=Tenant, L=Landlord]

Items	Value at beginning of year	Value of improvements made during year	Value of property sold or salvaged during year	Value at end of year	Depreciation charges		Repair expenses	
					Per cent	Amount	During year	Normal
Dwellings								
Tenant houses								
Other buildings								
Fences								
Drains, terraces								
Land clearing								
Total for operator								
Total for landlord								

	Beginning of year	Purchased during year	Sold during year	End of year
Value operator's real estate				
Value landlord's real estate				

Feed and Supplies

[T=Tenant, L=Landlord]

Items	Beginning of farm year			End of farm year		
	Amount	Price	Value	Amount	Price	Value
Hay						
Silage						
Corn						
Wheat						
Oats						
Cottonseed						
Seed cane						
Clover, grass seed						
Total for operator						
Total for landlord						
Operator's increase [1]				Decrease [1]		
Landlord's increase [1]				Decrease [1]		

[1] If value of feed and supplies at end of year is greater than at beginning the difference is "increase"; if less, "decrease."

MACHINERY AND EQUIPMENT

[T=Tenant, L=Landlord]

No	Items	Value at beginning of year	Value of purchases during year	Value of sales during year	Value at end of year	Depreciation charges		Value of repairs made during year
						Per cent	Amount	
	Wagons, beds, racks							
	Buggies, carriages							
	Sleds							
	Stalk cutters							
	Breaking plows							
	Harrows							
	Rollers, plankers							
	Corn, cotton planters							
	Grain drills, seeders							
	Plant setters							
	Cultivators							
	Corn, grain binders							
	Mowers							
	Tedders							
	Hay rakes, loaders							
	Hay stackers, balers							
	Manure spreaders							
	Fertilizer distributors							
	Threshers, hullers, etc							
	Husker, etc							
	Ensilage cutters							
	Grain cleaners							
	Feed grinders							
	Sirup and sugar eq'p't							
	Beet, tobacco eq'p't							
	Potato diggers, etc							
	Sprayers, etc							
	Engines							
	Tractors							
	Autotrucks							
	Work harness							
	Driving harness							
	Milking machines							
	Other dairy equipm't							
	Sheep equipment							
	Hog equipment							
	Poultry equipment							
	Bee equipment							
	Other equipment							
	Total for operator							
	Total for landlord							

SUMMARY

	Operator		Landlord	
	Item	Total	Item	Total
Investment: [1]				
Real estate (p. 18)				
Livestock (pp. 24, 25)				
Machinery and equipment (p. 29)				
Feed and supplies (p. 28)				
Cash to run farm				
Total	→		→	
Farm receipts:				
Crops (p. 23)				
Livestock, increase (p. 26)				
Other sources (p. 26)				
Increase feed and supplies (p. 28)				
Total	→		→	
Farm expenses:				
Current (p. 27)				
Unpaid family labor (__ mo.)				
Livestock, decrease (p. 26)				
Depreciation (pp. 28, 29)				
Decrease feed and supplies (p. 28)				
Total	→		→	
Farm income				
Interest on investment at __ per cent [2]				
Labor income				
Value operator's labor (__ mo.)				
Percentage return on capital [3]				
Value items for family use (pp. 23 to 26)	→		→	

[1] Use average investment or that of beginning of year, whichever more nearly represents the true capital invested in the year's business.
[2] Use current rate of interest on well-secured farm loans.
[3] After deducting value of operator's labor from farm income.

STATEMENT OF NET WORTH

	Beginning of farm year	End of farm year
RESOURCES:[1]		
All cash on hand		
Real estate (p. 28)		
Livestock (pp. 24, 25)		
Machinery (p. 29)		
Feed and supplies (p. 28)		
Household equipment		
Automobile		
Other tangible property		
Accounts owing to you		
Notes owing to you		
Mortgages owing to you		
Bonds and stocks owned		
Interest due you or accrued on notes, mortgages, and bonds		
Total resources		
LIABILITIES:[2]		
Accounts owed by you		
Notes owed by you		
Mortgages owed by you		
Interest due or accrued and owed by you		
Total liabilities		
Total net worth [3]		
Increase or decrease in net worth [4]		

[1] Includes all property owned by you and owing to you.
[2] Includes all amounts which are owed by you to some one else.
[3] Subtract total liabilities from total resources.
[4] If total net worth at the end of the year is greater than at the beginning of the year the difference is an increase; if less, a decrease.

XUM

SOME MEASURES OF SUCCESSFUL FARMS [1]

	This farm	Average of farms of same type in locality
SIZE OF BUSINESS: Farm area		
Crop area		
Months of man labor [2]		
Number of work stock		
Number animal units [3]		
Number cows		
Days productive man labor [4]		
INVESTMENT: Per cent of investment in real estate		
In buildings per crop acre		
In machinery per crop acre		
CROP RETURNS: [5]		
LIVESTOCK RETURNS: [6]		
Returns per $100 invested in livestock		
EFFICIENCY OF LABOR: Crop acres per man		
Crop acres per horse		
Productive work days per man		
Productive work days per horse		
COSTS: Total value of farm feeds consumed by livestock [7]		
Total value of purchased feeds consumed by livestock		
Total feed cost per animal unit		
Total value of man labor [8]		
Per cent total expenses are of total receipts		
Per cent total feed cost is of total livestock returns		
Net returns per $1 of labor		
Labor cost per productive work day		
PROFITS: Labor income		
Per cent return on investment		

[1] Designed for general application; record important measures for a given farm or locality. The value of any given measure will vary with the kind of farming and section of the country.

[2] Add months of hired labor, p. 27, family labor, p. 30, and farmer's labor, p. 30.

[3] An animal unit is used as the basis for comparing different kinds of animals and represents one mature horse, cow, or steer, or as many smaller animals as require the feed of these. Usually 2 head of young cattle or colts, 7 sheep, 14 lambs, 5 hogs, 10 pigs, or 100 chickens are each equivalent to one animal unit.

[4] The productive days of man labor represent the number of days of labor that should ordinarily be required to care for the livestock and raise the crops. See Table 1, p. 11, for approximate time required for various crops and classes of livestock and make computations for a given farm accordingly.

[5] Record important crops and yields per acre or receipts. Crop record, pp. 22, 23.

[6] Record important measures of good livestock such as production or receipts per cow, receipts per ewe, receipts per sow, etc. Livestock and livestock products records, pp. 24, 25, and 26.

[7] Find the value of all crops fed from crop record, pp. 22, 23, plus a charge for pasture, plus or minus the difference in feed inventory, p. 28.

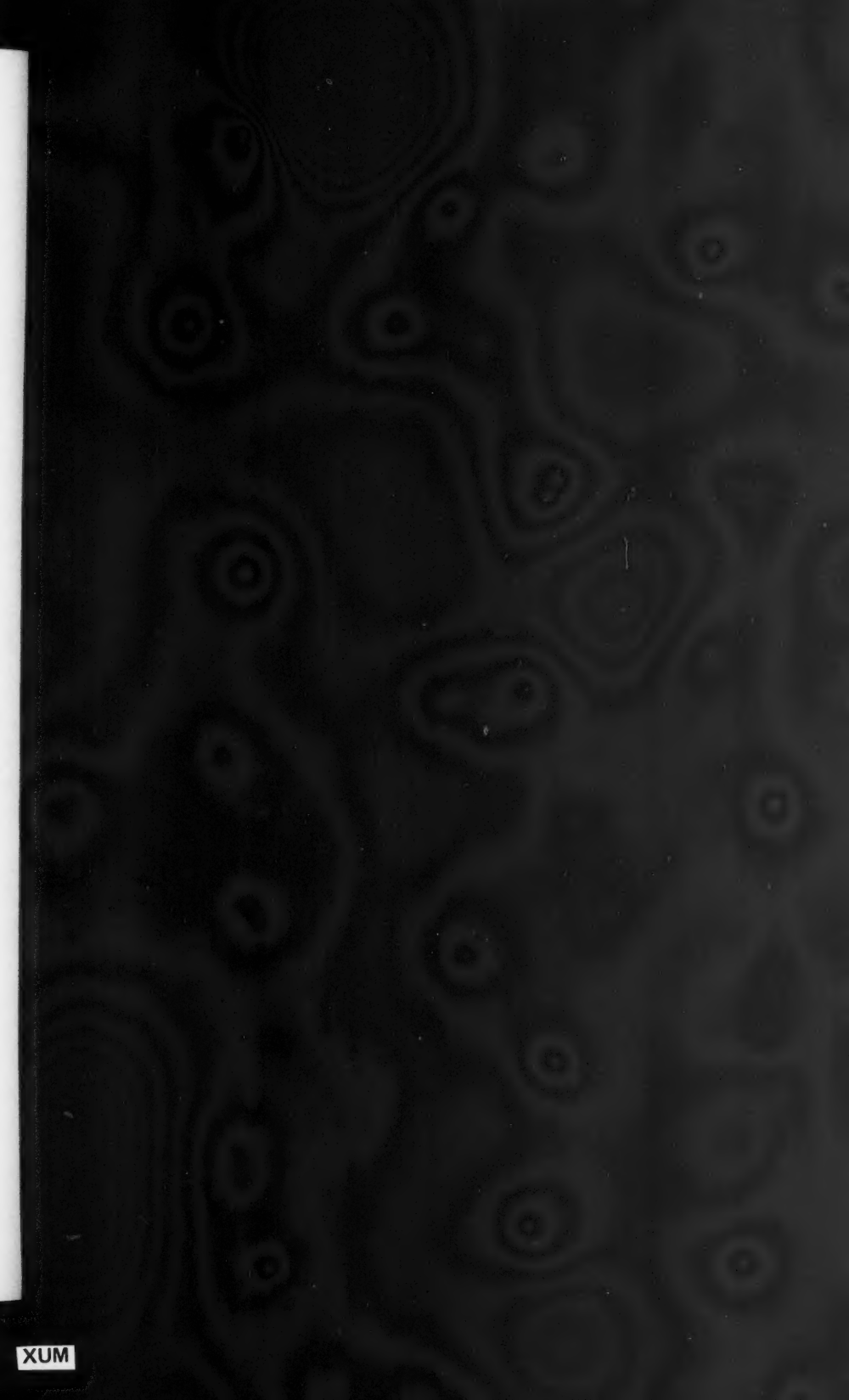
[8] Add value of all hired labor, p. 27, plus family labor, p. 30, plus farmer's labor, p. 30.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE WHEN THIS PUBLICATION WAS LAST PRINTED

Secretary of Agriculture	HENRY A. WALLACE.
Under Secretary	M. L. WILSON.
Assistant Secretary	HARRY L. BROWN.
Coordinator of Land Use Planning and Director of Information.	M. S. EISENHOWER.
Director of Extension Work	C. W. WARBURTON.
Director of Finance	W. A. JUMP.
Director of Personnel	ROY F. HENDRICKSON.
Director of Research	JAMES T. JARDINE.
Solicitor	MASTIN G. WHITE.
Agricultural Adjustment Administration	H. R. TOLLEY, *Administrator.*
Bureau of Agricultural Economics	A. G. BLACK, *Chief.*
Bureau of Agricultural Engineering	S. H. MCCRORY, *Chief.*
Bureau of Animal Industry	JOHN R. MOHLER, *Chief.*
Bureau of Biological Survey	IRA N. GABRIELSON, *Chief.*
Bureau of Chemistry and Soils	HENRY G. KNIGHT, *Chief.*
Commodity Exchange Administration	J. W. T. DUVEL, *Chief.*
Bureau of Dairy Industry	O. E. REED, *Chief.*
Bureau of Entomology and Plant Quarantine	LEE A. STRONG, *Chief.*
Office of Experiment Stations	JAMES T. JARDINE, *Chief.*
Farm Security Administration	W. W. ALEXANDER, *Administrator.*
Food and Drug Administration	WALTER G. CAMPBELL, *Chief.*
Forest Service	FERDINAND A. SILCOX, *Chief.*
Bureau of Home Economics	LOUISE STANLEY, *Chief.*
Library	CLARIBEL R. BARNETT, *Librarian.*
Bureau of Plant Industry	E. C. AUCHTER, *Chief.*
Bureau of Public Roads	THOMAS H. MACDONALD, *Chief.*
Soil Conservation Service	H. H. BENNETT, *Chief.*
Weather Bureau	FRANCIS W. REICHELDERFER, *Chief*

U. S. GOVERNMENT PRINTING OFFICE: 1939

For sale by the Superintendent of Documents, Washington, D. C. - - - - - Price 5 cents


XUM